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APL Performance: Measurement and Benchmarks

User Guide - Monthly & Daily Calculations

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About This Manual

This guide covers two interrelated topics: the measurement of portfolio performance, and the comparison of portfolios to benchmarks derived from other data services.

Performance Measurement is the determining factor on how well a portfolio manager has performed against the stock market. Performance Measurement on the APL system is based on the portfolio market value as opposed to the portfolio book value.

The default system configuration performs monthly performance calculation using the Modified Dietz Method.

> **Note:** An option is available for calculating performance using geometrically-linked daily returns based on market value and cash flows captured on each business day. Contact your Fiserv representative for more details.

Benchmarks, or indices, are composites of assets. The performance of a portfolio can be statistically compared with the performance of benchmarks to analyze, for example, risk; or to compare a portfolio's performance to that of an industry sector.

1.1 What is APL?

APL stands out as a comprehensive and mature wealth management platform that integrates a wide range of functionalities across portfolio management, model management, data reconciliation, order execution, billing, and performance reporting. Its unified ecosystem streamlines workflows by connecting front-, middle-, and back-office operations through seamless interoperability between key components.

With solutions for centralized trading, model management, and data validation, APL ensures that users can align investment strategies with real-time market insights and execute tax-sensitive trades efficiently. This interconnectivity empowers wealth managers, financial advisors, and operations teams to achieve operational excellence while maintaining regulatory compliance and enhancing client outcomes.

APL's depth of feature coverage, supported by decades of innovation and strategic enhancements, offers unparalleled versatility and precision. The platform's components bridge gaps between sponsors, advisors, and asset managers, enabling real-time collaboration and data synchronization. Advanced audit tracking, customizable dashboards, and integrated compliance checks reduce manual errors and provide robust decision support.

APL's robust architecture supports complex portfolios and multi-custodial environments, reinforcing its reputation as a future-proof solution that meets the evolving needs of the financial industry.

Chapter 2: Overview

2.1 What is performance?

Performance evaluation is the assessment of a manager's results which involves:

- Determining whether the money manager added value by outperforming the established benchmark
- Determining how the money manager achieved the calculated return (performance distribution analysis.)

Factors involved in performance calculations include market value, market size, timing of cash flows, and the skill of the investment manager.

2.2 Who governs performance reporting?

The Chartered Financial Analyst Institute, more popularly known as the CFA Institute, is charged with the responsibility of interpreting, revising and updating the standards for portfolio performance presentations. The Global Investment Performance Standards (GIPS®) are ethical standards set forth for investment managers for the purpose of creating performance reports that "ensure fair representation and full disclosure."

To obtain a copy of the GIPS Standards, please refer to the following URL on the CFA Web site:

http://www.cfainstitute.org/cfacentre/ips/gips/pdf/GIPS_2006.pdf

The purpose of GIPS is to standardize performance measurement and performance reporting on a global basis so that inter-market penetration is facilitated. Standardizing investment and performance practices also helps insure credibility, professional ethic, and comparability within the investment industry.

The full knowledge of the GIPS standards and full participation in adhering to the standards should include the following organizational groups:

- Marketing
- Portfolio Management
- Performance Analysts
- Systems
- Compliance

2.3 Monthly performance returns

APL uses the Modified Dietz Method for calculating performance on a monthly basis.

In the financial industry, performance return calculations have evolved as computing power has improved. The Dietz calculation evolved into the modified Dietz calculation. Now, modified Dietz is moving towards geometrically-linked daily returns. Each subsequent generation of the performance return calculation has become more accurate.

2.4 Daily performance returns

The Daily Performance feature allows for calculating performance returns based on market value and cash flows captured on each business day. Daily returns can then be geometrically linked to calculate returns for longer time periods.

Report formats and information displayed will not change for reports that show performance return. Any report that shows month-to-date, year-to-date, or inception-to-date returns, for example, will continue to show these returns. Behind the scenes, those returns will be calculated using geometrically-linked daily returns instead of modified Dietz.

> **Note:** (for existing clients using monthly calculations) Switching to daily calculations will not have any direct impact on the composite management or reporting process. However GIPS recommends that material changes to calculation policies and/or methodologies be disclosed. This is a material change and as such, appropriate disclosures may be necessary.

2.5 Performance data sources

The APL system pulls information from a variety of internal sources when creating performance reports. These sources include:

- General Ledger
- Portfolio data
- Account Master data
- Security Master data

General Ledger

When you open an account on APL, the system asks you to post an opening transaction. This transaction would consist of the date and value of the opening cash balance.

> **Note:** The most important general ledger entry is the opening cash transaction.

The date indicates the start of performance for the account and should therefore be the date of the first value in a performance file.

> **Notes:**
> - If the date is mid-month and reflects the actual opening date of the account, performance will be reflected for the partial month that the account was open and then entire months thereafter
> - If you choose to have the date reflect the prior month-end, you may enter that amount as zero, and post a receive of cash on the actual opening date. Using this method will show a contribution of the opening cash on the date of receipt. In this case, the calculation will be month-end to month-end, a full monthly weighted rate of return, using a beginning value of zero

The opening cash transaction is considered an “end of day” transaction. Any transactions that are made prior to or on the same date as the opening transaction will not affect cash balances. If you wish to show the addition of cash or securities, you will need to enter a transaction with a later date, or you will need to backdate the opening cash transaction. The default date for the OPE transaction is the current price date.

Fees

There are various fees that may be posted to an account that effect performance. These fees can be advisory fees, custodial fees, or “special” fees.

- Advisory fees must be coded with a transaction type of FEEADV in the General Ledger (EDGL). The dollar value posted will be positive or negative, since advisory fees can be rebated
- Entries are considered delivers when performance is calculated gross of fees; but are treated as expenses when calculated net of fees
- Custodial and “special” fees must be coded as a transaction type of DLV with a ticker of ALTFEE in the General Ledger (EDGL)

For information on running reports gross or net of fees, see “Performance Reporting.”

Dividends

When posting dividends or interest, you must post the entry with a transaction type of DIV or INT with the SACUS number for the security and not cash. This will include the income as part of the sector (equity or fixed) containing the security. If the cash SACUS, 13321, is used for these entries, the cash sector performance will be overstated and the equity or fixed sector performance will be understated.

> **Note:** Detailed instructions on posting entries to the General Ledger can be found in the APL Portfolio Administration (EXPERT) System User Guide.

Portfolio data

Purchases, sales, receives, delivers, and changes in market value affect account performance due to cash flow. These types of transactions are reflected in Level 1 and Level 2 of the APL Expert function EDPORT.

> **Note:** Detailed information on EDPORT can be found in the APL Portfolio Administration (EXPERT) System User Guide.

Purchases and sales

Purchases and sales affect performance because of the flow of cash and a change in the values of the sectors. When you purchase a security, the cash sector value decreases and the sector value for the asset increases. When you sell a security, the asset sector value decreases and the cash sector value increases.

If a purchase or sale is entered with a bad or missing price, performance can be either overstated or understated as the performance posting functions use these values when calculating the net contribution.

Receives, delivers and exclusions in EDPORT

Receives and delivers, defined in Level 2 of EDPORT, affect performance because they change values within the sector in which the securities are held. However, if the receives and delivers are posted incorrectly the overall performance values for the sector would not be adversely affected.

If there are missing receive or deliver dates and /or values, performance can be incorrect as posting functions will use these values when calculating the net contribution for performance. For instance, if a received position has an RDATE prior to the purchase date, the transaction will be treated as a purchase and would therefore incorrectly effect performance.

Unsupervised assets

On the Level 2 of EDPORT, you will find the EXCLD field. A coding of UNSUPR in this field identifies an unsupervised asset that is excluded from the portfolio value on various holdings reports and for performance purposes. The posting functions will read this field and exclude the value when it calculates the account's contributions and withdrawals and overall account value.

To change an asset from unsupervised to managed (or vice-versa), you must deliver out the asset and then receive it back into the account with the appropriate coding.

Account Master data

While no specific Account Master fields exist solely for performance posting, there are a couple things that should be done in order to ensure performance posts correctly.

- Verify that the primary fields used to identify accounts (SNAM, RR) are coded correctly
- Verify that the OPEDT and/or CLODT fields are populated correctly

Security Master data

Security maintenance is an essential part of performance. Security Master fields related to pricing, accruals and issue types must be coded correctly to ensure accurate returns.

Pricing

Every month-end security files should be checked for missing prices by running a ZEROPRICELIST report. Pricing corrections should be made prior to posting performance for accounts. If a missing price has not been corrected prior to posting performance, the functions will default to the closing price, CLSEP, for the missing price. This may not provide an accurate valuation of the account.

> **Note:** If you have any securities that are accurately priced at zero, you can code them with a Z in the second character of the PFLAGS field. Securities coded with a Z will be excluded from the missing price warnings that appear when posting performance.

Reclassifying

Reclassifying a security can affect performance. For example, if you change a convertible bond from the fixed income sector to the equity sector, you should deliver out the bond and receive the security in as an equity.

Simply changing the fixed type (FIXTYP) in the system will cause performance to show a decrease in the fixed income sector and an increase in the equity sector instead of a reclassification.

Accruals

APL calculates accrual values for fixed income securities using the following security master fields: MATDT, CPNRT, DTD, SPPDT, and DTDFL. In the case of fixed income accruals, day count becomes very important and incorrect day count can cause performance problems.

APL calculates accrual values for equity securities using the following security master fields: DIV, REC, and PAY. The DIV, REC and PAY fields also store information on stock splits and stock dividends.

Chapter 3: Performance Calculations

This chapter explains the various formulas used for calculating performance within Security APL. Included are formulas for calculating total returns, for linking performance returns, and for taking into consideration locked values.

> **Note:** Performance calculations assume that cash flows are beginning-of-day.

We use the Modified Dietz formula when calculating performance returns. However, performance data values can be posted for each business day (Daily Performance) or monthly plus current day. At what intervals performance data is captured (daily or monthly) is dependent on client configuration.

3.1 Understanding the Modified Dietz performance formula

For many of our clients, portfolio performance is calculated using the Modified Dietz method with monthly intervals. Returns for multiple consecutive months are linked together to derive returns for periods longer than one month, such as quarterly, yearly or “since-inception” returns.

The Modified Dietz calculation method has been the standard performance calculation used within the investment management industry. This method has two advantages compared to other performance calculation methodologies, cash flows are time-weighted and market values and accruals are generally only needed at the beginning and end of a period, which is defined as one month.

Performance Formula

This method is used to calculate returns between two consecutively dated values.

```
(EMV-(BMV+NC)) / (BMV+NCTW)
```

where:

Symbol	Description
EMV	End Market Value
BMV	Beginning Market Value
NC	Net Capital Change

Symbol	Description
NCTW	Net Change Time Weighted: `NC x (Days Held / Days in the Period)`

Example 1: Without contribution

When calculating performance without contribution, you only need to calculate the percent change of the initial and ending market value.

The following performance calculation uses these values:

- Beginning Market Value (BMV) = 10,000 on 8/31
- Ending Market Value (EMV) = 12,000 on 9/30

```
(EMV-BMV)/BMV
```

```
(12000-10000)/10000 = 2000/10000 = 20%
```

Example 2: With contribution

When calculating performance with contribution, you must take the difference between the initial and ending market values into consideration as well as the net change caused by the contribution. It is very important to time weight the contribution.

The following performance calculation uses these values:

- Beginning Market Value (BMV) = 10,000 on 8/31
- Net Capital Change (NC) = 1,000 on 9/16
- Ending Market Value (EMV) = 12,000 on 9/30

First, calculate the time-weighted net cash flow (NCTW), where the contribution is held for 15 out of 30 days. (In this example, the cash flow on the 16th is assumed to enter the account at beginning-of-day):

```
NCTW = 1000 x 15/30 = 500
```

Then, apply the rest of the formula:

```
EMV-(BMV+NC) / (BMV+NCTW)
```

```
12000-(10000+1000)/10000+500 = 1000/10500 = 9.52%
```

> **Note:** When there are several cash flows, NCTW will be the sum of several similar terms.

Factors affecting performance calculations

The following factors may result in a calculated return that is inconsistent with other similarly invested accounts:

- Closing price
- Purchase price
- Sale price
- Security receive/deliver value
- Back-dated entries
- Time sensitive cash flows

3.2 Linked Returns

You can geometrically link returns for multi-month periods to create a quarterly return, for example. After calculating the return for each month, link the returns. Linking is done geometrically (by multiplication) to capture the effect of compounding. Linking can be done with returns for any time period, as long as the underlying time periods are consecutive.

Linking consists of the following steps:

1. Convert every percent return to a decimal
2. Add 1.0 to the decimal
3. Multiply the returns
4. Subtract 1.0
5. Convert the decimal back to a percent return

Understanding the formula for linking returns

The formula for linking returns is:

```
[(1 + R1)x(1 + R2)x(1 + R3)...]−1 = RCUM
```

where:

Symbol	Description
R1	Rate of return for the first period
R2	Rate of return for the second period
R3	Rate of return for the third period
RCUM	Cumulative rate of return for the whole period

> **Note:** All returns should be expressed as decimals.

Example for calculating a quarterly return: First, obtain the returns for the months in the quarter:

- July return = 3%
- August return = 5%

- September return = 4%

Then, apply the formula:

```
[(1 + R1)x(1 + R2)x(1 + R3)...]-1 = RCUM
```

```
[(1+0.03)x(1+0.05)+(1+0.04)]-1
```

```
(1.03 x 1.05 x 1.04)-1
```

```
1.12476-1 = 0.12476 = 12.476%
```

3.3 Locked Values

The GIPS Standards recommends revaluing a portfolio whenever a large contribution or withdrawal is made. The APL system standard percentage for estimating locked values is 10%. A “10% event” is the regressed point at which differentiation occurs between the time- weighted and dollar-weighted rate of return. Therefore, you should defer to the time-weighted method every time there is a 10% or greater event.

When a 10% change is found, the market value on the previous pricing day is calculated and used in the formula as the Beginning Market Value (BMV). This utilizes the Time-Weighted Rate of Return Method and limits the impact of the change to a narrower time period. This is referred to as “locking a value”.

Each event must be factored in. Losses, gains, contributions and withdrawals all count. They do not balance each other out.

> **Note:** The system will automatically lock the value of a portfolio on the day prior to a 10% change by default. This percentage is configurable. Contact our client services team for details.

If a value is locked on the 15th, you would calculate performance before and after the locked value and then link the two returns to get the monthly performance return.

The formulas for calculating performance returns and for linking performance returns are both used to calculate the return for a portfolio with a locked value.

```
R = EMV-BMV+NC / BMV+NCTW
```

- Total return of the account for the period (R)
- Beginning Market Value (BMV) = 9,000 on 8/31
- Net Cash Flow (NC) = 2,000 on 9/16
- Ending Market Value (EMV) = 12,000 on 9/30
- Net Amount of Cash Flows, Time Weighted (NCTW)

Example: Without utilizing locked value

To illustrate the effect of a locked value, first calculate the rate of return without a locked value, using the Modified Dietz Method. The system automatically locks the value of the portfolio on 9/15, the day prior to the net change. In this example, the value is 10,000. Notice that the rate of return is 10%.

```
12000 - (9000+2000) / 9000+(2000x15/30) = 1000 / 10000 = 10%
```

Next, apply the performance formula again. However this time, calculate the rate of return twice. First calculate for the period before locking the value and then calculate for the period after locking the value.

Rate of return before locking the value

```
10000 - (9000+0) / 9000+0 = 1000 / 9000 = 11.11%
```

Rate of return after locking the value

```
12000 - (10000+2000) / 10000+(2000x15/15) = 0 / 12000 = 0
```

After calculating the rate of return using values prior to and after locking the value, apply the formula for linking returns.

```
1.111(1.000) = 1.111-1 = 0.111 = 11.11
```

Notice the difference between the rate of return between the locked value (0%) and the unlocked value (11%).

Notes:

- Locked values are not used in the cash sector because cash movements are too large and happen too often to lock in values
- If you want the percentage rate for locking values changed, or if you would want to manually lock values, contact our client services team.

Running Reports with Locked Values (SETLOCKSON)

While flows of 10% or higher automatically cause a lock to occur, you can run the SETLOCKSON function manually for troubleshooting purposes. Doing so allows you to view returns from locked value to locked value or from locked value to month end value within each month. This helps you narrow down the time period during which performance has deviated.

Performance reports can be run to display locked values as well as month-end values. The function that enables you to do this is SETLOCKSON.

Note: You will see a locked value on non-month-end dates. However, month-end market values appear as the TOTAL in the performance files, the same applies to the opening market value. As a result, a performance report such as PMHISTSECT and PMHISTPI will show only month end values in their returns.

To run SETLOCKSON:

1. At the WHAT NEXT? prompt, type SETLOCKSON and press ENTER. The following prompt will appear:

```
DISPLAY LOCKED PERFORMANCE VALUES?
```

2. Type Y and press ENTER to display locked values on performance reports. Type N and press ENTER to not display locked values on performance reports

The locked value display will remain turned on until you log off or until you “turn it off” by running SETLOCKSON again and typing N at the DISPLAY LOCKED PERFORMANCE VALUES? prompt.

Checking to see which values are locked with AUDITLOCKED

To verify which values are locked, run the AUDITLOCKED report. This report shows all dates on which the market value was locked due to a large flow.

To run this report:

1. At the WHAT NEXT? prompt, type AUDITLOCKED and press ENTER. The following beginning and ending date prompt will appear:

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 : 01/01/00
ENDING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 : 02/03/06
```

2. Type the beginning date the report should include and press ENTER
3. Type the ending date the report should include and press ENTER. You are prompted for an account selection

```
1614 ACCOUNTS CURRENTLY ON FILE
SEARCH FOR WHAT?
```

4. Specify the account or the account range for which you want to lock values. Press ENTER. The LOCKED.LRP report file is generated.

```
SAMPLE ASSET MANAGEMENT


          AUDIT LISTING OF LOCKED VALUES
          January 1, 2000 TO February 3, 2006
SNAM   SECTOR   DATE   VALUE
----   ------   ----   ------------

 MSP1            1         10/06/02              772.31
```

MSP1	1	10/06/02	3,880,803.67
MSP1	1	04/28/03	5,577,043.00
MSP1	1	03/23/04	8,636.36
MSP1	1	03/23/04	6,882,950.63
MSP1	1	05/11/04	23,611.74
MSP1	1	05/11/04	2,063,087.85
MSP1	2	06/20/02	1,081.57
MSP1	2	06/20/02	1,456,283.86
MSP1	2	05/11/04	6,005.12
MSP1	2	05/11/04	5,447,732.40
MSP2	1	10/06/02	772.31
MSP2	1	10/06/02	3,880,803.62
MSP2	1	04/28/03	5,577,042.94
MSP2	1	03/23/04	8,636.36
MSP2	1	03/23/04	6,882,950.63
MSP2	1	05/11/04	23,611.74
MSP2	1	05/11/04	2,063,087.85

3.4 Daily Performance

The Dietz calculation assumes that cash flows occur in the middle of the period. The modified Dietz calculation assumes that the cash flows are time-weighted in the period. The geometrically-linked daily return calculation places cash flows on the day they occur.

The data in EDPMSECT are the underlying values and cash flows for the performance calculation. Since accounts reporting performance from APL currently use the modified Dietz calculation, the current posting process, PMSECTAI, is geared towards posting the data in a manner consistent with that calculation.

In EDPMSECT, values are posted for each month-end, and more frequently if there are large cash flows resulting in LOCKED values. The sum of the cash flows is posted on a weighted date within the period. (Positive cash flows and negative cash flows are posted separately.)

For example, if there are two positive cash flows of equal size, one on the 5th of the month and one of the 25th of the month, the average date for the total cash flow will be on the 15th of the month. Similarly, if the first cash flow is much larger than the second, the average date will be earlier than the 15th. In other words, both size of the cash flows and dates of the cash flows will "move" the weighted date.

The concept of geometrically-linked daily returns is the same as modified Dietz where the period is one day.

Calculating geometrically-linked daily returns means that more data elements are needed. On APL, this means EDPMSECT will be populated with daily values and daily cash flows instead of monthly values and summed cash flows.

For calculating performance returns, Daily Performance uses modified Dietz, where the period is one business day. Returns for each business day are calculated based on market values, accruals, and cash flows and are then geometrically linked to calculate returns for the entire period (such as one month, one quarter, between any two business days).

In concept, a monthly return, for example, calculated using daily values and geometrically-linked daily returns is the same as a monthly return calculated using performance data with a LOCKED value for every business day of the month.

The core performance calculation logic, including how we calculate market values and cash flows, does not change when using Daily Performance, but values are captured more frequently. With Daily Performance, there will be values and cash flows every business day when they occur. As a result, there is no need for LOCKED values when large cash flows occur.

Traditionally, Wealth Management industry has measured performance using monthly Modified Dietz calculation. However, the industry is slowly migrating towards geometrically-linked, daily performance returns for portfolio performance. There are multiple reasons for this shift.

- Although GIPS does not specifically tell firms what performance calculation to use, GIPS guidelines do suggest using geometrically-linked daily returns. This method accounts for cash flows on the exact days they occur and are not time weighted
- In addition to standard monthly or quarterly reporting, with Daily Performance, ad hoc point-to-point reporting is also available
- Cash flows are captured on the day they occur eliminating the need for time-weighting flows
- In addition, troubleshooting account issues is easier with daily values and cash flows

Calculating monthly returns based on geometrically-linked daily returns might result in different returns than using modified Dietz in certain situations.

- If two accounts with the same holdings and NO cash flows are using different posting processes (one using modified Dietz monthly and one using daily performance), the returns are exactly the same, regardless of calculation method
- If two accounts with the same holdings and cash flows are using different posting processes, the returns may differ by a few basis points. The different treatments of cash flows explain this difference

Note: To determine how your firm can benefit from Daily Performance, contact our client services team.

3.5 Stored Performance Data

Information maintained on APL is the same for monthly Modified Dietz monthly and Daily Performance. However there are more rows of data for Daily Performance as market values are posted for each business day (as well as for the last day of the month if it is a non-business day). Cash flows are posted on the day they occur.

3.6 Performance Reports

Report formats and information displayed are the same regardless of method, monthly modified Dietz or Daily Performance. Any report that shows month-to-date, year-to-date, or inception-to-date returns, for example, still show these returns. However with Daily Performance, those returns are calculated using geometrically-linked daily returns instead of Modified Dietz.

Reports that show values and returns for all subperiods within a selected time period may look different for Daily performance because with Daily Performance the subperiods are one day (instead of one month). Some users may prefer to see data at monthly intervals.

3.7 Additional calculations

In addition to calculating monthly performance returns, returns with locked values and returns for multiple time periods, performance can be calculated other ways. These are described in the following sections:

- Annualized rates of return
- Dollar weighted vs. equal weighted rates of return

Annualized rates of return

Annualizing a return tells you what a yearly return would produce, given a cumulative return. Annualizing a return for a period shorter than a year can be misleading and GIPS recommends against doing so.

Formula:

$$(\text{cumulative return, in decimals} + 1)^{[1\ /\ (\text{years account is open})]} - 1 \times 100$$

Example:

- Account opened on 6/2
- Reporting date is 3/31 (The account has been open 9 out of 12 months.)
- Cumulative return is 7.41

Apply the formula:

$$(0.0741+1)^{[1/(9/12)]} -1 \times 100$$

$$1.0741^{(1.333)} - 1 \times 100$$

```
1.100 - 1 x 100 = 10
```

Dollar weighted vs. equal weighted rates of return

A “dollar-weighted” return for a composite or group of accounts is derived by taking the actual dollar value of each account, multiplying each value by the actual rate of return for the period, and dividing by the sum of the dollar values.

An “equal-weighted” return for a composite or group of accounts is derived by averaging all the returns.

Example:

- Account A is worth $1,000,000 on 12/31 and has a 1.00% return for the following month, January
- Account B is worth $9,000,000 on 12/31 and has a 9.00% return for the following month, January

Dollar weighted

The dollar-weighted composite return would be calculated using the following formula:

```
(EMV1xR1)+(EMV2xR2) / (EMV1+EMV2)
```

```
(1,000,000x0.01) + (9,000,000x0.09) / (1,000,000+9,000,000) =
82,000/10,000,000 = 0.082
```

On some GIPS-compliant reports (such as AIMRMEMO), the weighted average is done using MV1, MV2, ... equal to the prior month-end market value, adjusted for time-weighted cash flow in the current month (the NCTW).

Equal Weighted

The equal-weighted composite return would be calculated using the following formula

```
(R1+R2) / number of accounts
```

```
(0.01+0.09) / 2 = 0.10 / 2 = 0.05
```

Chapter 4: Performance Data

This section describes the various sources from which performance data is extracted.

> **Note:** This chapter contains many references to the EDPORT function. A detailed description of this function can be found in the APL Portfolio Administration (EXPERT) System User Guide.

4.1 General ledger

When you open an account on APL, the system asks you to post an opening transaction. This transaction would consist of the date and value of the opening cash balance. This date also indicates the start of performance for the account and should therefore be the date of the first value in the performance files. The current default date for the OPE transaction is the current price date.

Historical performance data can be entered with an “R” code rather than a “V” code. This makes it unnecessary to backdate transactions.

If the date is mid-month and reflects the actual opening date of the account, performance will be reflected for the partial month that the account was open and then entire months thereafter.

If you choose to have the date reflect the prior month-end, you may enter that amount as zero, and post a receive of cash on the actual opening date. Using this method will show a contribution of the opening cash on the date of receipt. In this case, the calculation will be month-end to month-end, a full monthly weighted rate of return, using a beginning value of zero.

> **Note:** The opening cash transaction is considered an “end of day” transaction. Any transactions that are made prior to or on the same date as the opening transaction will not affect cash balances. If you wish to show the addition of cash or securities, you will need to enter a transaction with a later date, or you will need to backdate the opening cash transaction.

Fees

There are various fees that may be posted to an account that have an effect on performance. These fees can be advisory fees, custodial fees, or “special” fees.

- Advisory fees must be coded with a transaction type of FEEADV in the General Ledger (EDGL). The dollar value posted will be positive or negative, since advisory fees can be rebated. Entries are considered delivers when performance is calculated gross of fees; but are treated as expenses when calculated net of fees
- Custodial and “special” fees must be coded with a TICK of ALTFEE and a transaction type of DLV in the General Ledger (EDGL)

For information on running reports gross or net of fees, see Performance Reporting.

Dividends

When posting dividends or interest, you must post the entry with a transaction type of DIV or INT with the SACUS number for the security. This will include the income as part of the sector (equity or fixed) containing the security. If the cash SACUS, 13321, is used for these entries, the cash sector performance will be overstated and the equity or fixed sector performance will be understated.

> **Note:** Detailed instructions on posting entries to the General Ledger can be found in the APL Portfolio Administration (EXPERT) System User Guide.

4.2 Portfolio data

Purchases, sales, receives, delivers, and changes in market value affect account performance due to cash flow. These types of transactions are reflected in Level 1 and Level 2 of the APL Expert function EDPORT.

> **Note:** Detailed information on EDPORT can be found in the APL Portfolio Administration (EXPERT) System User Guide.

Purchases and sales

Purchases and sales affect performance because of the flow of cash and a change in the values of the sectors. When you purchase a security, the cash sector value decreases and the sector value for the asset increases. When you sell a security, the asset sector value decreases and the cash sector value increases.

If purchase or sale is entered with a bad or missing price, performance can be either overstated or understated as the posting functions use these values when calculating the net contribution.

Receives and delivers

Receives and delivers affect performance because of the change in value of the sector in which the securities were held. However, overall performance values for the total sector should not be affected if the receives and delivers were posted correctly.

If there are missing receive or deliver dates and /or values, performance can be either overstated or understated as the posting functions will use these values when calculating the net contribution. If a received position has an RDATE prior to the Purchase date, the transaction will be treated as a purchase and would therefore affect performance.

Unsupervised assets

On the second level of EDPORT, you will find the EXCLD field. A coding of UNSUPR in this field identifies an unsupervised asset that will not be included in the portfolio value on various holdings reports and for performance purposes. The performance posting functions will read this field and exclude the value for these positions when it calculates the account's contributions and withdrawals and overall account value.

If you need to change an asset from an unsupervised asset to a managed asset, or from managed to unsupervised, you must deliver out the asset and then receive it back into the account as a managed or unsupervised asset.

4.3 Security Master data

Security Maintenance is an essential part of Performance. Security Master fields related to pricing, accruals or issue types must be coded correctly to ensure accurate returns.

Pricing

Every month-end, security files should be checked for missing prices. Missing prices can be checked for by running a ZEROPRICELIST or STKRECORD report. Pricing corrections should be made prior to posting performance for accounts. If, for any reason a missing price has not been corrected prior to posting performance, the functions will default to using the closing price, CLSEP, for the missing price. This may not provide an accurate valuation of the account.

If you have any securities that are accurately priced at zero, you can code them with a Z in the second character of the PFLAGS field. Securities coded with a Z will be excluded from the missing price warnings that appear when posting performance.

Accruals

The values of the MATDT, CPNRT, DTD, SPPDT and DTDFL fields are the sources for the calculation of accruals for fixed income securities. The values of the DIV, REC and PAY fields are the sources for the calculation of accruals for equity securities. If there is bad data in any of these fields, the accrual value will be incorrect.

The DIV, REC and PAY fields also store information on stock splits and stock dividends. If a split has occurred within recent months, there will be one less cash dividend amount coded, which can affect your accrual calculations if you are posting back more than 130 days. The farther back you post, the less accurate your accrual figures may be, and information previously reported to clients may change.

If you are questioning accruals on a specific security, you can check the pertinent fields using EDITSEC or EDFEND, or you may run ARNREP, which will show accruals per security in a particular account.

4.4 Accrued income in performance files

The values of the maturity date, coupon rate, dated date, special payment date and coupon payment flags fields are the sources for the calculation of accrued interest for fixed income securities in the performance files. The values of the dividend rate, ex-date, and payable date fields are the sources for the accrued income calculation for equity securities. If there is bad data in any of these fields when performance posting functions are run, the accrual value will be incorrect in EDPMSECT.

If a split has occurred within recent months, there will be one less cash dividend amount coded. This can affect your accrual calculations if you are posting back more than 130 days. The farther back you post, the less accurate your accrual figures may be and information previously reported to clients may change.

If there is bad data in any of the fields used for calculating accruals, the accrual values will be incorrect. If you are questioning accruals on a specific security, you can check the pertinent fields using EDITSEC or EDFEND. Or, you may run ARNREP, which will show accruals per security in a particular account. Please refer to the next section for more information on accruals.

Fixed income accruals

The values of the maturity date, coupon rate, dated date, special payment date and coupon payment flags are the sources for the calculation of accruals for fixed income securities. The four positions within the coupon payment flags are further defined as:

Position 1: Coupon Flag

Value	Description
D	Default. Indicates that the bond is not paying interest and will not be redeemed. Yield is assumed to be 0.
E	Extra long first coupon. Dated date to coupon date following two normal first coupon payment dates.
F	Flat. Indicates that the bond is not paying interest, but redemption is not impaired.
L	Long first coupon. Dated date to coupon date following normal first coupon payment date.
S	Short first coupon. Dated date to normal coupon payment date. Period is less than a normal coupon period.
X	No value - (default)

Position 2: Payment Frequency

Value	Description
A	Annual
F	Irregular floater (Coupon payment dates are based on the Floating Rate Table)
M	Monthly
Q	Quarterly
S	Semi-annually
T	At maturity
X	Semi-annually (default)

Position 3: Day Count Method

Value	Description
0	30/360
1	Actual/actual, coupons equalized Government obligations, treasuries and non-factorable government obligations--issue type 44
2	30/actual
3	Actual/360 Repurchase Agreements--issue type 78
4	Actual/365
5	Actual/actual, coupons not equalized
6	360E. If the ending date (to date) falls on the 31st of a month, this day count method forces the date to be the 30th of that month. There is no different provision for February in our calculation. Used for foreign bonds and the amortization of domestic bonds.
7	360E+. Uses the European Day Count algorithm. Most commonly used in European bond markets. If the ending date falls on the 30th or the 31st of a month, this day count algorithm forces the ending date to be the first of the next month.

Position 4: Strip Indicator

Value	Description
I	Interest Only
P	Principal Only

Equity accruals

The values of the dividend rate, ex-date, and payable date are the sources for the calculation of accruals for equity securities. If there is bad data for dividend rate, ex-date or payable date then the accrual values will be incorrectly stated. APL can store four different payment dates of information (dividend rate, exdate and payable date).

If the security pays dividends quarterly, then a year's worth of information is stored. If a security pays dividends monthly, then only four months' worth of accruals are stored. APL also uses the same fields for storing the four payment dates of information to hold stock splits and stock dividends. If a split has occurred within recent months, there will be one less cash dividend amount coded, which can affect accrual numbers. Therefore, accrual data previously reported to clients may change. The further back performance is posted, the less accurate accrued income figures may be. If it is necessary to post back beyond 130 days, it is best accomplished by initially posting in a test account to gage the extent of the accrued income change.

All manager (portfolio valuation) reports calculate accruals on the fly using dividend rate, ex-date and payable date stored. If a user runs a report for a historical time period, there is a risk that the information will not match the data stored in the performance file.

Questionable accruals (for a specific security or a portfolio total) may be checked by viewing the pertinent fields using EDITSEC or EDFEND, and running an ARNREP report, which will show accruals per security in a particular account.

> **Note:** Consistently moving the global Performance Wall Date forward will protect accrued income information from being posted over and thus from becoming inaccurate.

Additionally, for any account that has had a manual change made to any performance files (EDPMSECT), a WALLDT should be entered within Infodex to protect the data in that specific account.

Both global and account specific wall dates must be entered as the end of the month date plus one day. For example, when protecting all data prior to May 31, 2005, the wall date that must be entered is 05/32/2005.

4.5 Issue types

Accurate issue type coding is essential for accurate sector performance. IS maps security issue types to specific sectors in performance.

> **Important:** If you change the issue type of a security, you must back out all associated transactions from all accounts that own it; then receive it back into the accounts as a new security. Otherwise, reporting accuracy will be adversely impacted. Contact our client services team for more information on how to perform this task

> **Notes:**
> - The lists in this section were current as of November 11, 2002. You can run a PMSECTCHECK report to verify your specific issue type mapping and to verify that all issue types owned in your accounts are mapped to a particular sector
> - Issue types that are not defined in a particular sector will be included in an account's total performance only. This will cause the sum of the individual sectors to not equal the sum of the total sector. Contact your account manager to discuss the mapping of issue types not currently mapped

Equities sector

Type	Description
3	options
28	common stocks

Type	Description
30	warrant and rights
31	convertible bonds
32	units
35	mutual funds
37	foreign common stocks
46	convertible preferred stocks
51	option - call
52	option - put
81	mutual funds - aggress. growth
82	mutual funds - equity income
83	mutual funds - conserv. growth
87	equity futures contract
88	equity futures reserves
96	percs (pfd equity redemp cert.)
801	mutual funds - intl. equity

Fixed Income sector

Type	Description
5	corporate bond funds
6	municipal bond funds
7	government bond fund
12	municipal bonds (gen oblig)

Type	Description
14	municipal bonds (revenue)
29	preferred stocks
34	corporate bonds
39	pay in kind bonds
44	government obligations
45	foreign bonds
47	preferred income funds
49	taxable municipal bonds
50	municipal bonds
53	option - futures
56	mortgage & bond funds
60	asset backed securities
63	foreign cds / comm paper
64	floating rate notes
65	miscellaneous bonds
66	high yield bonds
70	zero coupon bonds
71	adjustable rate preferred
75	zero coupon bonds (corporate)
76	zero coupon bonds (municipal)
77	promissory notes
78	repurchase agreements

Type	Description
79	zero coupon bonds (gov't)
80	mutual funds - fixed income
85	bond futures contracts
86	bond futures reserves
89	futures contracts
93	collateralized mortgage obligations
101	liabilities
441	government agencies
444	mortgage backed securities
802	mutual funds - intl. fixed income

Cash Equivalents sector

Field	Description
1	cash and cash equivalents
4	foreign currencies
36	cert of deposits / comm paper

Chapter 5: Posting Performance Returns

Two methods are available for posting performance returns:

- Monthly (using Modified Dietz)
- Daily (geometrically-linked)

> **Note:** Your environment will only be configured for one of these methods. Contact our client services team if a change is required.

5.1 Posting performance using Modified Deitz

This section describes how to post monthly performance returns and handle errors that may occur. The functions include: PMSECTAI, PMSECTAI01, PMSECTAICORE, and PMSECTWAYBACK. The latter three being specialized versions of PMSECTAI.

The function PMSECTAI

The primary function for posting data to performance files, PMSECTAI, takes information from EDGL, EDPORT, and the security master files. Performance data must be re-posted any time these underlying files are changed, so that the performance values always reflect the current values in the account.

The PMSECTAI function can only run online for one account at a time. Contact client services team if you need to run this function on more than one account.

130-day performance window

The “performance window” is the period of 130 days prior to today where you are permitted to post performance data. Some clients may also have a “performance wall” set up which reduces the number of days in this window. If you need to post beyond the wall date or beyond the 130-day window, contact your account manager.

Performance walls can be set up on the account level for those clients that use INFODEX by coding the WALLDT field. This date will be used if it is before the date on the default performance wall.

To run PMSECTAI, follow these steps:

1. At the WHAT NEXT? prompt, type PMSECTAI and press ENTER. The following prompt will appear:

```
PERFORMANCE WINDOW OPEN BACK TO MM/DD/YY

PERFORMANCE WALL IS MM/DD/YY
```

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR \CURPRDATE :
```

2. Type in the date from which to begin posting and press ENTER

> **Note:** This date must be a month end.

The following prompt will appear:

```
INCLUDE MTD AND LAST DAY PERFORMANCE ?
```

3. If you want to post up to the most recent price date, type Y and press ENTER. If you do not, type N and press ENTER. Performance will be posted up to the most recent month-end. The following prompt will appear:

```
SEARCH FOR WHAT?
```

4. Enter in the account selection and press ENTER

When PMSECTAI has completed, a file named PMLOG.PRT is created. This file is a review of the posting process. It also contains missing price problems and displays locked values that have been posted.

Other performance posting functions using Modified Deitz

If you have additional performance sectors but only want to post performance on the “core” sectors, PM01 - PM04, the function PMSECTAICORE should be run. It is run in the same manner as PMSECTAI, but it only posts performance for the PM01, PM02, PM03, PM04 and PM sectors.

When performance is updated on a nightly basis through APL production, PMSECTAI01 is the function that is typically run. This function posts performance for the total sector, PM01, only. This is done to reduce the time needed to update your files.

If the data on the PMLOG.PRT file is too much to read or if you want to see it in an more organized way, you can run PMLOGREPORT. The report will show missing prices for the accounts that had performance posted most recently. The report file is PMLOG.LLL

Errors that occur when posting performance

Typically, the only error that will occur when posting performance is missing price error. (This better described as an alert to notify you about missing prices.) The PMLOG report will display securities that are missing a price and will list the date of the missing price.

```
MISSING PRICE FOR PROCT 10/31/98 ON FOLLOWING: 938200AP7OKWA03(380123)OK
WASHINGTON CO MED AUTH 6.25%  11/01/03
```

Using EDITSEC or EDSEC, correct the missing price and post performance again.

5.2 Posting daily performance returns

This section describes how to post daily performance returns and handle errors that may occur. The functions include: POSTDAILYPERF, POSTDAILYPERFCORE, and POSTDAILYPERF01.

The Daily Performance posting tools capture performance data such as market values, accruals, and cash flows for each business day within the posting window. The daily posting process posts a V (market value) value for each business day of the month (as well as for the last day of the month if it is a non-business day). C (contribution) values are posted on the day they occur.

> **Note:** If the market value for a particular day is 0.00, and there is no activity for that day, the V value is not posted if there is no activity.

The function POSTDAILYPERF

The primary function for posting data to performance files, POSTDAILYPERF, takes information from EDGL, EDPORT, and the security master files. Performance data must be re-posted any time these underlying files are changed, so that the performance values always reflect the current values in the account.

The POSTDAILYPERF function can be run on nightly basis.

To run POSTDAILYPERF, follow these steps:

1. At the WHAT NEXT? prompt, type POSTDAILYPERF and press ENTER. The following prompt will appear:

   ```
   PERFORMANCE WINDOW OPEN BACK TO MM/DD/YY
   PERFORMANCE WALL IS MM/DD/YY
   BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR \CURPRDATE :
   ```

2. Type in the date from which to begin posting and press ENTER

   > **Note:** Enter BEGINNING DATE from when the daily performance elements will be posted. This is the date performance will be posted from up to the current date, as long as it is later than either the Performance Window or Performance Wall, whichever is later.

   The following prompt will appear:

   ```
   SEARCH FOR WHAT?
   ```

3. Enter the account selection and press ENTER

   When POSTDAILYPERF is completed, a file named PMLOG.PRT is created. This file is a review of the posting process. It also contains missing price problems.

Daily performance records are posted to selected accounts for the applicable sectors for the tool chosen.

Other Daily performance posting functions

These periodic performance posting tools capture performance data elements including market values, accruals, and cash flows for each month and if selected, the last business day within the posting window.

If you have additional performance sectors but only want to post performance on the “core” sectors, PM01 - PM04, the function POSTDAILYPERFCORE should be run. It is run in the same manner as POSTDAILYPERF, but it only posts performance for the Sector 01, Sector 02, Sector 03, Sector 04.

When performance is updated on a nightly basis through APL production, POSTDAILYPERF01 is the function that is typically run. This function posts performance for the total sector, Sector 01, only. This is done to reduce the time needed to update your files.

If the data on the PMLOG.PRT file is too much to read or if you want to see it in an more organized way, you can run PMLOGREPORT. The report will show missing prices for the accounts that had performance posted most recently. The report file is PMLOG.LLL.

The Client Services performance team will not research or validate Returns calculated as a result of using these tools. We “HIGHLY SUGGEST” that you perform this function on a TEST account prior to implementing the performance revision on the live account. By doing so, you are able to review the possible performance revisions that may take place via the Post 60 Months Back function.

Errors that occur when posting Daily performance

Typically, the only error that will occur when posting performance is missing price error. (This better described as an alert to notify you about missing prices.) The PMLOG report will display securities that are missing a price and will list the date of the missing price.

```
MISSING PRICE FOR PROCT 10/31/98 ON FOLLOWING: 938200AP7OKWA03(380123)OK
WASHINGTON CO MED AUTH 6.25%  11/01/03
```

Using EDITSEC or EDSEC, correct the missing price and post performance again.

5.3 Performance files

This section explains the core performance sectors, or files. It also outlines how transactions are reflected in different sectors.

Understanding the core sectors

There are five core sectors on the APL System. These core sectors are described below.

File	Sector	Attributes
M	Manual	Used either for storing billable values for clients using the APL Billvue system OR for benchmark SNAMs. This sector cannot be used for both items

File	Sector	Attributes
1	Total	Total account value of supervised assets
2	Equity	Equity asset values only
3	Fixed Income	Fixed income asset values only
04	Cash	Cash values only

With the exception of the Manual sector, each sector contains the information shown below.

Field	Decription
PORT	The portfolio value. Valid options include: • TOTAL: Month-end value or contribution amount • LOCKED: Intra-month value posted prior to a large contribution • ADVFEE: Advisory Fee (included in contribution amount) • BILL: Billing value (This will appear in the Manual sector only)
TYPE	The type of transaction. Valid options include: • V: Month-end or locked value • Z: Income (This will appear only in the Total and Cash sectors) • I: Income on sectors • C: Contribution • A: Accrual • P: Purchases • S: Sales • R: Gross returns (This will appear for converted accounts only) • N: Net of fee returns (This will appear for converted accounts only)
DATE	The date the transaction was posted
AMOUNT	The value of the transaction
CHNGE DATE	The last time performance data was posted. This is helpful in researching performance problems

Understanding contributions and withdrawals in core sectors

The following tables show how contributions and withdrawals are reflected in the core sectors.

Type	Total Sector		Equity and Fixed Income Sectors		Equity and Fixed Income in the Cash Sector		Cash and Cash Equivalents in the Cash Sector	
	In	Out	In	Out	In	Out	In	Out
OPE			X			X		
CLO				X	X			
RCV (cash)	X				X		X	
DLV (cash)		X				X		X
RCV (security)	X		X					
DLV (security)		X		X				
RCVINC	X				X		X	
DLVINC		X				X		X
INT				X	X			
DIV				X	X			
INC				X	X			
INTACC (-)			X			X		
INTACC (+)				X	X			
FEEADV		X						X
PRI (-)								
PRI (+)								

5.4 Editing and viewing performance data

This section describes how to edit historical performance information and how to view performance data.

Editing performance data

When the performance posting functions are run, the system will pick up corrections during the time for which you are posting. This information, including values, contributions and withdrawals, is stored in the performance file.

If a correction needs to be made prior to the allowable posting period, you will need to use the function EDPMSECT to correct the problem. This function requires a password, *BECAREFUL*, prior to enabling you to access the performance files.

The values in this file usually comprise information that has been previously reported to your clients, so any alteration should be done with the utmost care. If you have manually fixed an account by making changes directly in EDPMSECT, and subsequently the performance posting functions are run for that period, your change will be overwritten.

1. At the WHAT NEXT? prompt, type EDPMSECT and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

2. Enter the account identifier and press ENTER. The following prompt will appear:

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

3. Enter additional commands to broaden or narrow your account selection, and press ENTER. The following prompt will appear:

```
WHICH FILE(M=MANUAL  01=TOTAL  02=EQUITY  03=FIXED INCOME  04=CASH RET=EXIT)
```

4. Type the sector identifier and press ENTER. The EDPMSECT editor will appear for the sector you selected. Use the appropriate database manager commands to view and edit data
5. After making changes, type (Q and press ENTER to save changes
6. Type (Q and press ENTER again to exit the editor. The sector prompt will appear. To make changes in other sectors, repeat Steps 4 - 6

The following example shows an example of data in the performance file when using EDPMSECT. In this example, equity performance data is displayed:

```
WHICH FUNCTION: ? EDPMSECT

**********TO GET THIS MESSAGE TYPE <HELP> *****************

PORT OPTIONS: TOTAL  STOCKS BONDS  CASH   BILL   INCOME CAPITA ADVFEE COMBO
LOC
```

```
TYPE OPTIONS: V(VALUATION)/C(CAPITAL CHANGE)/I(INCOME)

EDPMSECT

1586 ACCOUNTS CURRENTLY ON FILE SEARCH FOR WHAT? BOGAHU

1 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):

WHICH FILE(M=MANUAL 01=AUTO TOTAL 02=EQUITY 03=FIXED INCOME 04=CASH RET=EXIT)
02

(0)   HISTORICAL PERFORMANCE DATA FOR: SNAM= BOGAHU

(1)   PORT  TYPE  DATE  AMOUNT  CHNGE DATE

(2)   --------

(272)  [P

(0)   HISTORICAL PERFORMANCE DATA FOR: SNAM= BOGAHU

(1)   PORT  TYPE  DATE  AMOUNT  CHNGE DATE

(2)   ----

(3) TOTAL C 19970430 46029.38 0

(4) TOTAL V 19970430 46029.38 1

(5) TOTAL A 19970531 170.25 0

(6) TOTAL V 19970531 418712.75 1

(7) TOTAL I 19970615 356.25 0

(8) TOTAL C 19970625 41000.00 0

(9) TOTAL A 19970630 138.00 0

(10) TOTAL V 19970630 466379.25 1

(11) TOTAL I 19970701 127.90 0

(12) LOCKED A 19970713 54.00 1

(13) LOCKED V 19970713 481222.13 1

(14) TOTAL C 19970714 -63688.36 0
```

Note: If a change is made to the TOTAL sector, the appropriate changes must also be made in the individual sector.

Viewing performance data

Performance files can also be viewed by using the function FASTPMSECT. FASTPMSECT enables you to view performance values for an account, either in its entirety or over a certain period of time.

1. At the prompt, type FASTPMSECT and press ENTER. The following prompt will appear:

```
DATES? (R)ANGE or (A)LL?
```

2. If you want to look at a specific period, type R and press ENTER. If you want to look at all data, type A and press ENTER. The following prompt will appear if you chose a date range:

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR \CURPRDATE:
```

3. Type the beginning date and press ENTER. The following prompt will appear:

```
ENDING DATE (MM/DD/YY) - HIT ENTER FOR \CURPRDATE:
```

4. Type the ending date and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

5. Enter the account selection and press ENTER. The following prompt will appear:

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP)
```

6. If you want to sort, narrow or broaden the account selection, type additional database commands and press ENTER. The following prompt will appear:

```
WHICH FILE(M=MANUAL  01=TOTAL  02=EQUITY  03=FIXED INCOME  04=CASH RET=EXIT)
```

7. Type the sector identifier for the sector you want to view and press ENTER. The requested data will appear on screen.

```
SNAM: BOGAHU    BWNUM:   -001550   DTCNO: 654328123

WHICH FILE(M=MANUAL 01=AUTO TOTAL 02=EQUITY 03=FIXED INCOME 04=CASH RET=EXIT)
02

HISTORICAL PERFORMANCE DATA FOR: SNAM= BOGAHU, BWNUM:    -001550

PORT  TYPE  DATE  AMOUN  TCHNGE DATE

----

TOTAL A 19981231 1349.13 19990226
```

```
TOTAL V 19981231 5824842.35 19990226
TOTAL I 19990116 1349.13 19990226
TOTAL A 19990131 2440.42 19990401
TOTAL V 19990131 3682079.51 19990401
TOTAL I 19990214 604.80 19990401
TOTAL A 19990228 4956.36 19990424
TOTAL V 19990228 5279077.66 19990424
TOTAL I 19990316 5800.61 19990424
TOTAL A 19990331 1652.92 19990528
TOTAL V 19990331 5361776.84 19990528
TOTAL I 19990401 382.88 19990528
LOCKED A 19990406 1270.04 19990528
LOCKED V 19990406 5555009.65 19990528
TOTAL C 19990407 559000.00 19990528
```

5.5 Auditing performance data

The section describes functions and reports that assist with auditing performance data.

The PERFSCREEN function

The function PERFSCREEN enables you to verify how the system calculated a given return, or analyze the effect of the timing of a cash flow on a month's performance.

1. At the WHAT NEXT? prompt, type PERFSCREEN and press ENTER. The PERFSCREEN data screen will appear:

```
+-------------------------------------------------------------------------
-+
| PERFORMANCE SCREEN
|
| Beginning Value Ending Value Days in Period
| 0.00 0.00 0
|
| Contributions
```

```
|
| 1 0.00 2 0.00 3 0.00 4 0.00
| 5 0.00 6 0.00 7 0.00 8 0.00
| 9 0.00 10 0.00 11 0.00 12 0.00
| 13 0.00 14 0.00 15 0.00 16 0.00
| 17 0.00 18 0.00 19 0.00 20 0.00
| 21 0.00 22 0.00 23 0.00 24 0.00
| 25 0.00 26 0.00 27 0.00 28 0.00
| 29 0.00 30 0.00 31 0.00
|
| Performance for Period 0.000%
|
| F1-Help F3-Abort F7-Calculate F10-Exit
```

Field	Description
Beginning Value	The value of the portfolio at the beginning of the period being analyzed
Ending Value	The value of the portfolio at the end of the period
Days in Period	The number of days in the period
Contributions (1-31)	Contributions to the portfolio during the period
Performance for Period	The calculated performance

2. Using the TAB key, move to the columns and enter the beginning value, ending value and the days in the period
3. When you are ready to re-calculate, press F7. The return displayed at the bottom of the screen for Performance for Period will be the return for the account during that period

Calculating performance using locked values

The PERFSCREEN function does not enable you to include locked values with the other values in your calculation. If you are trying to prove performance for a month with a locked mid-month value, you can do the analysis piece by piece using the following method:

- Calculate the return for the part of the month prior to the locked value, with the locked value as the Ending Value

- Calculate the part of the month after the locked value, with the locked value as the Beginning Value
- Calculate linking the values to obtain performance return for the complete period

Performance Auditing reports

There are a number of reports that will assist with the auditing of performance data. The most commonly used ones are listed below:

Report	Description
AUDITLOCKED	Displays locked values
CHECKOPEDT	Displays accounts that have problems with the account opening date
CHECKGLOPE	Displays accounts with discrepancies with the OPE entry in the general ledger
PMLOGREPORT	Displays missing prices found during performance posting
PMSECTCHECK	Displays the performance sectors and which security issue types are included. It also displays owned securities not included in core sectors, as well as securities included in more than one core sector
PRICEXCEPT	Displays large price swings that could affect performance

Chapter 6: Performance Reporting

This chapter describes the process of running performance reports.

> **Note:** Unless otherwise noted, all reports mentioned in this chapter are run using APL Expert. For more information, see the APL Portfolio Administration (EXPERT) System User Guide.

6.1 Reporting Daily Performance vs Monthly Modified Dietz

Report formats and information displayed are the same regardless of method, monthly modified Dietz or Daily Performance.

Any report that shows month-to-date, year-to-date, or inception-to-date returns, for example, still shows these returns. However with Daily Performance, those returns are calculated using geometrically-linked daily returns instead of Modified Dietz.

Reports that show values and returns for all subperiods within a selected time period may look different for Daily performance because with Daily Performance the subperiods are one day (instead of one month). Some users may prefer to see data at monthly intervals.

6.2 Insuring that correct market values are used

All reports require two key inputs:

- The account range, which identifies the source of the data populating the report
- The date range, which establishes the time frame for this slice of data

Depending on the nature of the report, additional information may be required. Prior to running reports, you should take a few steps to assure that the report being run will use the correct data:

1. Run ZEROPRICELIST to ensure that there are no zero (0) prices for any month-end reports you run
2. Verify that all cash and position transactions have been posted
3. Verify that performance posted for the account by running one of the performance posting functions.
4. When you run a report that uses an “as of” date, verify that the prices correspond with the correct as of date
5. If you want to run any report as of last night, type NO when the system displays the prompt: RUN A REPORT ERROR TRAP? The prices then default to CLSEP. (Please define error report trap?)

6.3 Running reports with and without management fees or taxes

There are two functions that allow you to run performance without fees:

- SETNETFEE enables you to run performance reports net of advisory management fees
- SETALTFEE enables you to run performance reports net of alternate fees, such as custodial fees or any fees other than management fees

> **Important:** Advisory fees must be coded with a transaction type of FEEADV in the General Ledger's TRDTY field.

> **Note:** FEEADV entries are considered delivers (i.e., transaction type DLV) when the system runs performance gross-of-fees, but are treated as expenses when the system runs performance net-of-fees.

Gross vs. Net of fees

Following are the data used in this comparison:

- Beginning Market Value (BMV) = $10,000 on Aug. 31st
- Net Capital Change (NC) = $1,000 on Sept. 16th
- Fee = $100 (paid from the account), taken on Sept. 16th
- Ending Market Value (EMV) = 12,000 on Sept. 30th

In determining the gross-of-fees return, the fee is treated as a withdrawal (external cash flow) and deducted from the NC value. Whereas for the net-of-fees return, the fee is excluded from this pre-calculation.

```
NC (gross-of-fees) = NC - Fee = 1000 - 100 = 900
```

NCTW = *NC x (Days Held / Days in the Period)*

```
NCTW (gross-of-fees) = 900 x (15/30 Days) = 450
```

```
NCTW (net-of-fees) = 1000 x (15/30 Days) = 500
```

The remaining calculation is the same for both methods:

Return = *EMV - (BMV+NC) / BMC+NCTW*

```
Return (gross-of-fees) = 12000 - (10000+900) / 10000+500 = 1100/10450 = 10.52%
```

```
Return (net-of-fees) = 12000 - (10000+1000) / 10000+500 = 1000/10500 = 9.52%
```

Effects of SETNETFEE and SETALTFEE Usage

The following table shows how SETNETFEE and SETALTFEE settings interact to produce different types of reports.

SETNETFEE	SETALTFEE	Effect
No	No	All performance reports are run gross of all fees. This is the system default.
Yes	Yes	This option produces performance reports net of all fees.
No	Yes	This option produces performance reports net of all non-management fees.
Yes	No	This option produces reports that are net of all management fees.

Running performance net of management fees with SETNETFEE

SETNETFEE allows you to run performance reports net of advisory management fees. FEEADV in EDGL will create a corresponding type in the performance file for the ADVFEE field. When running reports net of fees use SETNETFEE to exclude the ADVFEE type.

1. At the WHAT NEXT? prompt, type SETNETFEE and press ENTER. The following prompt will appear:

```
SET PERFORMANCE NET OF FEES?
```

2. Type Y and press ENTER if you want to run performance reports net of advisory management fees. Otherwise, type N and press ENTER

If you selected Y, the performance calculation then excludes any FEEADV entries in the performance file from the contribution / withdrawal amounts, providing you with a net of fees return.

> **Note:** The net- of-fees calculation will remain enabled until you log off, or until you run SETNETFEE again and type N at the SET PERFORMANCE NET OF FEES? prompt.

Running performance net of special fees with SETALTFEE

SETALTFEE allows you to run performance reports net of alternate fees, such as custodial fees or any fees other than management fees. . In order to utilize this function, you must code all non management fees with a TICK of ALTFEE and a Transaction Type (TRDTY) of DLV in the General Ledger.

To run the function:

1. At the WHAT NEXT? prompt, type SETALTFEE and press ENTER. The following prompt will appear:

```
SET PERFORMANCE NET OF ALTFEES?
```

2. Type Y and press ENTER if you want to run performance reports net of alternate fees. Otherwise, type N and press ENTER

> **Note:** The net of alternate fees calculation will remain enabled until you log off, or until you "turn it off" by running SETALTFEE again and type N to the SET PERFORMANCE NET OF FEES? prompt

Reporting net of taxes using the SETNETTAXES function

This function enables you to turn run performance net of federal taxes.

1. At the WHAT NEXT? prompt, type SETNETTAXES and press ENTER. The following prompt will appear:

```
SET PERFORMANCE NET OF TAXES?
```

2. To run performance reports net of taxes, type Y and press ENTER. To run performance reports gross of taxes, type N and press ENTER

> **Note:** The system default is gross of taxes.

Reporting net of fees and taxes using the SETNETFLEX function

This function enables you to run performance reports net of advisory fees, net of alternative fees, and taxes from all performance reports. This function combines the capabilities of SETNETFEE, SETALTFEE, and SETNETTAXES.

1. At the WHAT NEXT? prompt, type SETNETFLEX and press ENTER. The following prompt will appear:

```
SET PERFORMANCE NET OF FEES?
```

2. To run performance reports net of fees, type Y and press ENTER. To run performance reports gross of fees type N and press ENTER. The following prompt will appear:

```
SET PERFORMANCE NET OF ALTFEES?
```

3. To run performance net of alternate fees, type Y and press ENTER. To run performance reports gross of alternate fees, type N and press ENTER. The following prompt will appear:

```
SET PERFORMANCE NET OF TAXES?
```

4. To run performance reports net of taxes, type Y and press ENTER. To run performance reports gross of taxes, type N and press ENTER. Reports can now be run, including or excluding advisory fees, non-management fees and taxes

6.4 Reporting performance based on a maximum fee

GIPS requires that composite performance reports be consistent in the way that numbers are reported. To that end, often reports are run on a “net of fee” basis. However, you may not have an actual fee posted to the account when performance is reported. If this is the case, assume the highest fee and include it in the performance return. Once a maximum fee is posted to the account, you can report performance net of the maximum fee, net of the actual fee if one has been posted, or gross of that if you need the flexibility to report on:

- Actual fees posted to the account
- Assumed max fees posted to the account
- No fees

The POSTHIGHFEE and SETNETMAXFEE functions accommodate this capability.

Posting a new entry to the Total (01) performance sector using POSTHIGHFEE

This function allows you to post a new entry to the total (01) performance sector of an account or multiple accounts based on the date, accounts, and maximum annual fee basis parameters entered. These new entries will post with a PORT value of MAXFEE and a TYPE value of F.

To run this function:

1. Type POSTHIGHFEE at the WHAT NEXT? prompt. Press ENTER. You are asked to specify the date of the market value for which to calculate the maximum fee

```
Select Date of Market Value to Calculate Maximum Fee : 09/11/17
```

2. Type the date in YYYYMMDD format. Press ENTER. You are prompted for the date the fee will post to the account

```
Select Date of Market Value to Calculate Maximum Fee : 09/11/17
```

3. Specify a fee date. You are prompted for the maximum annual fee basis

```
Enter Maximum Annual Fee Basis : 10
```

4. Input the maximum fee in a percentage basis. Press ENTER. You are prompted to specify the account identifier for the audit report

```
Use Which Account Identifier for Audit Report? SNAM
```

5. Input the identifier, such as SNAM, DTCNO, or BWNUM. Press ENTER. You are prompted for search criteria to identify the account or accounts you wish to choose

```
SEARCH FOR WHAT? NJ001
```

This example shows the posting of a maximum fee of 10% to the account(s) chosen as of 1/15/04 based on a market value of 9/30/04. The maximum fee is assumed to be an annual fee and will be divided by 4 to get the quarterly fee posted. The entry will post to EDPMSECT (1) Total Sector +as follows:

```
(393) MAXFEE   F20060131  -498485.9820060215
```

An output report called HIGHFEEAUDIT.LAU is created. This report lists accounts updated with a MAXFEE entry, accounts that already had a MAXFEE entry, and accounts that did not have a market value as of the date entered.

```
Run Date : 02/15/06 12:39 P.M.          POSTHIGHFEE Audit Report          PAGE
1

Market Value Date   : 01/31/11

Posting Date: 01/31/11 Maximum Annual Fee : 10.000000%

Account    Name    Value    Max. Fee

----------   ------------------------------

0 Account Already Contain a MAXFEE Entry

---------------------------------------

0 Account With No Market Value

-----------------------------

1 Account Updated With a MAXFEE Entry

-----------------------------------

NJ001    NJ001    19,939,439.08    -498,485.98
```

Notes:

- The fee basis entry is based on percentages (i.e. .10=10%,.05=5%)
- The function will allow one MAXFEE entry to be posted per calendar quarter
- If a non-business day is entered as the fee date, the date will default to the next business day

Choosing fee types using SETNETMAXFEE

This function allows you to select the type of fee to be considered when calculating returns for performance reports. To run the function:

1. Type SETNETMAXFEE at the WHAT NEXT? prompt. The following options appear

```
  1. Ignore All Fees
  2. Consider Only Actual Fees
  3. Consider Only Maximum Fees
  4. Consider Maximum Fees Unless Actual Fees Are Found

Which Scenario Should be Considered for Performance Reporting?
```

2. At the “Which Scenario Should be Considered for Performance Reporting?” line, type the number associated with the appropriate option

Description	Details
Ignore All Fees	Performance reports will ignore all fees posted to an account
Consider Only Actual Fees	Performance reports will consider only actual fees posted to an account (i.e. ADVFEE entries in EDPMSECT). This is the same as setting SETNETFEES to YES
Consider Only Maximum Fees	Performance reports will consider only maximum fees posted to an account (i.e. MAXFEE entries in EDPMSECT)
Consider Maximum Fees Unless Actual Fees Are Found	Consider MAXFEE unless an ADVFEE entry is found

3. Press ENTER. You are prompted to enter the maximum fee basis for display purposes. In this example, choose 3. Consider Only Maximum Fees
4. Enter the maximum fee basis (i.e. 10 for 10%). This will add a note to the performance report indicating that performance was run net of the highest fee applicable and will show the rate entered here. The note will appear as follows:

```
PERFORMANCE NET OF THE HIGHEST FEE APPLICABLE, 10.0%, PER ANNUM, DEDUCTED
QUARTERLY
```

The notation, which indicates that the report ran regardless of actual net fee settings, will appear on accounts for the following performance reports:

- AIMRMEMO
- AIMRFLEX
- AIMRCOMP
- PMFIRMSECT
- PMHISTSECT
- PMHISTYTD
- PMITD
- PMFIRMFLEX

6.5 Combining performance

A group of individual accounts can be combined either permanently or into a single account for performance reporting.

Permanently combining accounts using EDITAC, EDDESPCT, and COMBONYC

1. Set up the combined account profile. This is done with the EDITAC function. For directions on running this function, please refer to Running the EDITAC function when combining accounts
2. Map the individual accounts to the newly created account using the EDDESPCT function

It is recommended that you do not combine more than ten accounts into a single account. If, however, this is a requirement:

a. Set up a series of “master” accounts with ten or fewer sub-accounts
b. Combine the “master accounts” into one large combined account

3. Combine the data of the individual accounts into the data file for the combined account(s). This is done using the function COMBONYC.

Running the EDITAC function when combining accounts

For a full description of this function, see the APL Portfolio Administration (EXPERT) System User Guide.

1. At the WHAT NEXT? prompt, type EDITAC, and press ENTER
2. Type the account identifier for the new account, and press F10
3. Select an account master template, and press ENTER

4. Select YES or NO to edit additional fields, and press ENTER
5. Use the TAB key to move to the fields and enter the appropriate data
6. Press F10 to save changes

Running the EDDESPCT function when combining accounts

The EDDESPCT function enables you to blend data from one or more accounts by linking them to a “target” account. With this function, you can:

- Create a new benchmark that is a proportional blend of several benchmarks
- Create an account that is composed of several subaccounts

Notes:

- This function cannot create a new account. It can only link accounts to an existing account. Use a function such as EDITAC to create an account to use as the basis for a combined or blended account
- Any number of accounts can be combined. However, the total number of tax lots in the combined account cannot exceed 10,000

To use EDDESPCT: After setting up the combined account, you want to identify this account as a combined account, and map the individual accounts to the combined account.

1. At the APL Expert WHICH FUNCTION:? prompt, type EDDESPCT and press ENTER. The EDDESPCT table will appear:

```
WHICH FUNCTION: ? EDDESPCT

EDDESPCT (PUBLIC)

(0) SNAM RA CATEGORY,PCT,CATEGORY,PCT,...ETC

(1) AFFEBE -1 BOGAHU

(2) AIKMTR -1 TRSMST

(3) BALLLU -1 BOGAHU

(4) BARKCH -1 BOGAHU

(5) BERGIN -1 BOGAHU

(6) BULLSA -1 BOGAHU

(7) CAGNJA -1 BOGAHU

(8) CDANEK -1 GIBSML,GARLJU,NEWMPA,HOPEBO,ASTAFR

(9) CROWRU -1 BOGAHU

(10) DAVISF -1 CALVET,DDAVIS
```

```
(131)
```

2. The data should be entered on the first available blank line, in the following manner:

```
[TARGET SNAM] [-1] [SOURCE SNAMS]
```

where

- [TARGET SNAM] is the short name of the account that contains the combined data (the target account)
- [-1] is an indicator identifying TARGET SNAM as a combined account
- [SOURCE SNAMS] are the short names of the source accounts to be combined

For example, if you wanted to combine account data for BALLLU, JORDMI, and WOODTI into a single account COMBAC, you would enter it as:

```
(131) COMBAC -1 BALLLU JORDMI WOODTI
```

3. After you have mapped the accounts, type [Q and press ENTER to save the data
4. Press [Q and press ENTER to exit the function

Running the COMBONYC function when combining accounts

1. At the WHAT NEXT? prompt, type COMBONYC and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

2. Type the account identifiers for the accounts you want to combine and press ENTER. The following will appear:

```
XXXCMB <= SNAM1, SNAM2, SNAM3

SURE YOU WANT TO COMBINE THESE ACCOUNTS?
```

3. Type Y and press ENTER to combine the accounts. The following will appear:

```
Do You Want to Combine Performance For These Accounts?
```

4. Type Y and press ENTER. Performance reports can now be run for the combined account

> **Note:** To update any changes made in individual accounts to the combined account(s) COMBONYC must be run.

Temporarily combining accounts using the COMBINE and COMBOPMSECT functions

Temporarily combine accounts using the COMBINE and COMBOPMSECT functions. Use the COMBINE function under most situations where you need to temporarily combine an account. Use the COMBOPMSECT function when you need to combine data on a sector basis.

Combining accounts using the COMBINE function

A group of accounts can be combined on a temporary basis for performance reporting using the COMBINE function. This function combines accounts into the COMBO account. Performance reports are then run using SNAM EQ COMBO as the account selection.

1. At the WHAT NEXT? prompt, type COMBINE and press ENTER. The following prompt will appear:

```
TO COMBINE ACCOUNTS TEMPORARILY, (SNAM = 'COMBO') SELECT AT THE 'SEARCH FOR
WHAT' LEVEL…

SEARCH FOR WHAT?
```

2. Enter the account selection and press ENTER. The following prompt will appear:

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

3. Enter additional commands for sorting, broadening or narrowing search and press ENTER. The following prompt will appear:

```
YOU HAVE SELECTED :  SNAM1 SNAM2 SNAM3 … SURE YOU WANT TO COMBINE THESE
ACCOUNTS?
```

4. Type Yes and press ENTER to temporarily combine accounts. The following prompt will appear:

```
ENTER ACCOUNT TITLE FOR THIS COMBINED ACCOUNT (UP TO 40 CHARS:) ACCOUNT TITLE:
```

5. Enter the title to appear for the account on the report and press ENTER. The following prompt will appear:

```
ACCOUNT TITLE: xxxx    < OK ?
```

6. If this title is correct, type Yes and press ENTER. If you type No and press ENTER, the system will return to the prompt for a new title. The following will appear:

```
YOU MAY NOW RUN ANY REPORT AND CALL THESE ACCOUNTS UNDER SNAM : COMBO
```

Combining accounts using the COMBOPMSECT function

Performance data for accounts can also be combined on a sector basis. This is done using the function COMBOPMSECT.

1. At the WHAT NEXT? prompt, type COMBOPMSECT and press ENTER. The following will appear:

```
TO COMBINE ACCOUNTS TEMPORARILY, (SNAM = 'COMBO') SELECT AT THE 'SEARCH FOR
WHAT' LEVEL…

WHICH FILE: (M=MANUAL 01=TOTAL 02=EQUITY  03=FIXED INCOME  04=CASH)
```

2. Type the sector identifier and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

3. Type the account selection and press ENTER. The following prompt will appear:

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

4. Enter additional commands for sorting, broadening or narrowing search and press ENTER. The following prompt will appear:

```
YOU HAVE SELECTED :  SNAM1 SNAM2 SNAM3 … SURE YOU WANT TO COMBINE THESE
ACCOUNTS?
```

5. Type Yes and press ENTER to temporarily combine accounts. The following prompt will appear:

```
ENTER ACCOUNT TITLE FOR THIS COMBINED ACCOUNT (UP TO 40 CHARS:) ACCOUNT TITLE:
```

6. Enter the title to appear on the report and press ENTER. The following prompt will appear

```
ACCOUNT TITLE: xxxx    < OK ?
```

7. If this title is correct, type Yes and press ENTER. If you type No and press ENTER, the system will return to the prompt for a new title. The following will appear:

```
YOU MAY NOW RUN ANY REPORT AND CALL THESE ACCOUNTS UNDER SNAM : COMBO
```

> **Note:** Only the data in the sector you selected will be combined.

6.6 Auditing performance data using PERFSCREEN

APL lets you verify performance calculations and consider the affects of hypothetical circumstances on performance calculations. The PERFORMANCE SCREEN, accessed using the PERFSCREEN function, provides a worksheet and a performance calculator that you can use to:

- Understand how the system arrives at a given performance statistic
- Filter out contributions and withdrawals to an account in order to evaluate performance based only on other factors
- Analyze how the timing of contributions and withdrawals can affect performance during a particular month
- Isolate performance values on either side of a locked value

Time weighting and their effect on performance scenerios

Performance calculations in APL are time-weighted. This means that the beginning and ending values alone do not determine the performance of an account. Events that change the value of an account affect performance differently depending on when they occur in the period being analyzed.

The PERFSCREEN function takes this fact into account as it analyzes user-defined performance scenarios. The function lets users move contributions and withdrawals to different days within the time period

being analyzed, and then see the affect these changes have on performance.

Locked values and their effect on performance scenerios

PERFSCREEN does not let users enter locked values. However, these values do exist in accounts, and they can distort performance statistics. To examine performance for a month with a locked mid- month value, perform the analysis piece-by-piece, as follows:

1. Calculate the return for the period prior to the locked value, using the locked value as the Ending Value
2. Calculate performance for the period after the locked value, using the locked value as the Beginning Value

Using the PERFSCREEN function

1. At the WHAT NEXT? prompt, type PERFSCREEN and press ENTER. The Performance Screen will appear:

```
-------------------------------------------------------------------------------
+
| PERFORMANCE SCREEN
|
| Beginning Value Ending Value Days in Period
```

```
| 0.00 0.00 0
|
| Contributions
|
| 1 0.00 2 0.00 3 0.00 4 0.00
| 5 0.00 6 0.00 7 0.00 8 0.00
| 9 0.00 10 0.00 11 0.00 12 0.00
| 13 0.00 14 0.00 15 0.00 16 0.00
| 17 0.00 18 0.00 19 0.00 20 0.00
| 21 0.00 22 0.00 23 0.00 24 0.00
| 25 0.00 26 0.00 27 0.00 28 0.00
| 29 0.00 30 0.00 31 0.00
|
|
| Performance for Period 0.000%
|
|
| F1-Help F3-Abort F7-Calculate F10-Exit
|
|
+-------------------------------------------------------------------------
-+
```

The PERFORMANCE SCREEN lets a user enter values for a set of variables that affect performance, and then see how these values alter the result of an APL performance calculation.

Specifically, this screen provides entry fields for the fields in the table that follows:

Field name	Description
Beginning Value	Value of an account at the beginning of the time period for which APL is assessing performance
Ending Value	Value of an account at the end of the time period for which APL is assessing performance

Field name	Description
Days in Period	Duration in days of the period for which APL is assessing performance
Contributions	Date and amount of a contribution or withdrawal (negative value) to the account

2. Tab through the columns and enter the beginning value, ending value and the days in the period
3. Enter any contributions (positive values) and/or withdrawals (negative values) on appropriate days in the calendar grid. APL calculates performance for the selected time period using the Beginning and Ending Values, not including contributions and withdrawals
4. When you are ready to re-calculate, press F7. The resulting Performance for Period will appear

6.7 GIPS-compliant reporting

The AIMRMEMO and AIMRFLEX reports produce a weighted AIMR/ GIPS return for a given composite, which has been previously set up in EDMEMO. For each period, these reports weight portfolio returns using the beginning market value plus the net time weighted contributions for the period regardless of whether the report is run gross or net of fees. This value is used to weight the GIPS returns, as well as produce the weighted standard deviation figure for a given composite and time period. These market values always include accrued income for all securities within the reporting sector.

Performance returns for an account are included only if the account was managed for the full period in question (month, quarter or year). In other words, if an account was open for the first six months of the calendar year, it will be included in the composite for reports run for the first and/or second quarters but will not be included in a report run for the full year.

> **Note:** We are frequently asked how the compounded quarterly and annual returns on the AIMRMEMO report calculated. Each compound quarter-to-date performance figure is calculated by linking the three monthly returns. The compound year-to-date performance for each account is calculated by linking the monthly returns. This figure is omitted for accounts that were not managed for the full year.

The PMSTDEV is a 3 year annualized standard deviation report. The summary report will show monthly and quarterly return data as well as a 3 year annualized standard deviation with related benchmark data.

Proper EDMEMO coding of accounts to be included in composites

The basic EDMEMO syntax and sample EDMEMO entries are:

```
AIMR: (composite name) (start date) (end date).
```

Example:

```
AIMR: E1 10/31/92 06/30/94

AIMR: E2 06/30/94 12/31/94

AIMR: E1 12/31/94
```

An account with these entries would be in composite E1 from November 1992 through June 1994, in composite E2 from July 1994 through December 1994, and would rejoin composite E1 in January 1995. The composite name is usually three characters or less (E1 and E2 in this example are the composite names).

> **Note:** Composite codes may be expanded to six characters via a CRMS ticket to the Performance and Billing Group.

When coding account composites:

- Every line with information for this report begins “GIPS” or “AIMR.”
- Keep the composite name short, three characters or fewer. It forms part of the filename of the output file. The files produced for an account would be “SNAM1.LAM” and “SNAM2.LAM”
- Ending date may be left empty until an account leaves a composite

EDMEMO allows coding of one account or a group of individual accounts (not simultaneously), while MEMOCODE allows simultaneous coding of a group of accounts. To use MEMOCODE, answer the prompts in the same manner as in EDMEMO as demonstrated below:

```
WHAT NEXT(***NEW MAIL HAS ARRIVED***)? MEMOCODE

9999 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT? RR LT 99

999 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):

Would you like to <A>dd or <R>emove Items, or <Q>uit ?? A

Enter Code to Add  (eg: TRATTN:) : AIMR:

Enter Data to Add For the AIMR: Requested (eg. TICK EQ XYZ) AAA 12/31/90

{example composite and starting date}

Are You Sure You Want to Add the Following AIMR: for the selected accounts

AIMR: AAA 12/31/90

Please Answer Yes or No ? Y

Adding New AIMR: to the Selected Accounts

Please Wait...

RESTRPT.LRP
```

> **Note:** It is best to code a few accounts in a test procedure and run through the various functions and reports prior to implementing this across all of your accounts.

Coding multiple accounts in EDMEMO

Use the AIMRCODE function to remove and add a code for a group of accounts simultaneously.

Obtaining a list of accounts included in a composite

To list all accounts within each composite, a report may be generated from EDMEMO showing all accounts and the composite they belong to as well as the inclusion date:

```
WHAT NEXT? EDMEMO

1946 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT? RR LT 99

980 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP): AND

AND WHAT? \WHOMEMO

ENTER EDMEMO CODES: AIMR

ENTER PARTIAL DESCRIPTION (OR RETURN FOR NONE): { enter AIMR code}

SEARCHING EDMEMO…..

PLEASE WAIT...

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP): {enter}

EDIT OR PRINT ? P

SCAN FOR SPECIFIC FIELDS(E.G. RESTRC OR <RET> FOR ALL):  {enter}

PROCESSING 183 OF 183

EDMEMO.LRP

WHAT NEXT? BROWSE
```

The output of the AIMRFLEX report will also list all accounts included in a given composite for a given time period.

Generating the AIMRMEMO report

1. At the prompt, type AIMRMEMO and press ENTER. The following prompt will appear:

```
AS OF DATE (MM/DD/YY):
```

2. Type the month end date that you wish to report through and press ENTER. The following prompt will appear:

```
ENTER FULL UNIVERSE:

xxx ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

3. Type the account selection and press ENTER. The following prompt will appear:

```
XX RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

4. Type additional commands for sorting, broadening or narrowing account selection and press ENTER. The following prompt will appear:

```
JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC

QTR1  QRT2  QRT3  QRT4  YRLY  OPEDT ACCT  MNTHEND

SORT BY WHICH FIELD?
```

5. Type the field by which the report should be sorted and press ENTER. The following prompt will appear:

```
SORT IN DESCENDING ORDER?
```

6. Type Yes and press ENTER to sort in descending order. Type No and press ENTER to sort in ascending order. The following prompt will appear:

```
WHICH FILE: (M=MANUAL 01=AUTO 02=EQUITY 03=FIXED   04=CASH)
```

7. Type the sector identifier and press ENTER. The following prompt will appear:

```
WHAT BENCHMARK? (I.E. SP500 DJIA)
```

8. Type the SNAMs for the benchmarks you want to use, and press ENTER. The following prompt will appear:

```
PROCESSING X OF X

("ALL" WILL CREATE A COMPLETE UNIVERSE AS WELL AS ALL SUB UNIVERSES)

SELECT MGR SUB-UNIVERSE:
```

9. Type the code for the composite on which to report or type ALL to report on all composites and press ENTER

Selecting ALL will produce a separate report for each composite(SUMxx.LSM and SUMxx.LAM) as well as a report for all accounts (SUMALL.LSM and SUMALL.LAM). The message below will appear and the system will return to the WHAT NEXT? prompt.

```
ACCOUNTS WITH NO MEMO MARKED "AIMR" SEE: SUMBAD.LXX
```

If you chose a specific composite, the following prompt will appear:

```
SUB-UNIVERSE TITLE:
```

10. Type the title of the composite, for example, BALANCED ACCOUNTS, and press ENTER. The following prompt will appear:

```
SUB-UNIVERSE BENCHMARKS:
```

11. Type the SNAM for the benchmark that you want to appear for this particular composite and press ENTER. (This benchmark must be one that was included in your first benchmark selection.) The following prompt will appear:

```
COMPOSITE: (TITLE) SUMxx.LSM SUMxx.LAM

SELECT MGR SUB-UNIVERSE
```

12. Type another composite or press ENTER to exit

- If you type another composite, repeat Steps 9-12
- If you press ENTER, the following message will appear and the system will return to the WHAT NEXT? prompt:

```
ACCOUNTS WITH NO MEMO MARKED "AIMR" SEE: SUMBAD.LXX
```

Generating the AIMRFLEX report

The AIMRFLEX report measures performance of accounts in more than one composite. It offers considerable flexibility in designing a GIPS compliant report that meets your specific needs.

To use this function, follow these steps:

1. At the WHAT NEXT? prompt, type AIMRFLEX and press ENTER. The following prompt will appear:

```
WHICH FUNCTION:? AIMRFLEX

AIMRFLEX (PUBLIC)
```

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

2. Type the leading value for the period, and press ENTER

Leading value	Effect
Last day of the month	If the last day of the month is input as the beginning date, the end date of the previous month populates the leading value column. For instance, if 9/30/ 2005 is the beginning date, 8/31/2005 populates the leading value column
First day of the month	If the first day of the month is input as the beginning date, the end date of the previous month populates the leading value column in the report. For instance, if 10/1/2005 is the beginning date, 9/30/2005 populates the leading value column

The following prompt will appear:

```
WHICH FUNCTION: ? AIMRFLEX

AIMRFLEX (PUBLIC)

BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 : 20060101

ENDING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

3. Type the ending date for the period, and press ENTER. The following prompt will appear:

```
1586 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

4. Select the accounts to use, and press ENTER. The following prompt will appear:

```
Report on Which Performance Sectors?
```

5. Type the number codes for the performance sector codes on which to report, with each code separated by a space. These codes are listed in Understanding the core sectors. Then, press ENTER. The following prompt will appear:

```
Enter Desired Benchmarks : SP500 DJIA
```

6. Type the codes for the desired performance benchmarks, each separated by a space. You can display a list of benchmarks using the BENCHLIST function. Then, press ENTER. The following prompt will appear:

```
Enter Desired Benchmarks : SP500 DJIA
```

```
  1. None
  2. Monthly
  3. Quarterly
  4. Yearly
  5. Leading (Beginning Value)

Select Display Frequency for Values :
```

7. Type the number for the period to be used in benchmark reporting, and press ENTER. The following prompt will appear:

```
Report on Which Performance Sectors? 02 03 04 Enter Desired Benchmarks : SP500
DJIA

  1. None
  2. Monthly
  3. Quarterly
  4. Yearly
  5. Leading (Beginning Value)

Select Display Frequency for Values : 3

  1. None
  2. Monthly
  3. Quarterly
  4. Yearly

Select Display Frequency for Returns :
```

8. Type the number for the frequency that benchmarks should be displayed in reports, and press ENTER. The following prompt will appear:

```
The SNAM field from EDAC will be displayed on this report.

Do you want to display additional EDAC fields ? N
```

9. If you have any additional Security Master fields that you want displayed in the reports, type them here, separating each field name with a space. Then, press ENTER. The following prompt will appear:

```
Do you want to display additional EDAC fields ? N

Display Multiple Sectors on a Single Page or on Multiple Pages?
```

10. If you have any additional Account Master fields that you want displayed in the reports, type them here, separating each field name with a space. Then, press ENTER. The following prompt will appear:

```
Display Multiple Sectors on a Single Page or on Multiple Pages? S
```

11. Select whether you want sector reports printed on individual pages, and press ENTER. The following prompt will appear:

```
Display Multiple Sectors on a Single Page or on Multiple Pages? S
Enter Report Title : TEST REPORT
```

12. Type the report title, and press ENTER. The following prompt will appear:

```
Scanning AIMR Composite Info
Include Which Composites ("ALL" Selects All Composites)?
```

13. Specify which composites you want to use, and press ENTER. The following prompt will appear:

```
1 - No Sort
2 - Value Field
3 - Return Field
Sort on Which Type of Field?
```

14. Select whether you want the report's results sorted by security value or return, or specify no sort, and press ENTER. The following prompt will appear:

```
Use Which Period Type for Sorting?
```

15. If you selected sorting by value or return, select whether the returns are to be sorted Monthly or Quarterly by typing M or Q respectively. Then, press ENTER. The following prompt will appear:

```
Sort on Which Sector? ?
```

16. Select the sector on which you want to sort the results. (The sectors to include in the report were selected in an earlier step. Sector codes are listed in Understanding the core sectors.) Then, press ENTER. The system displays prompts showing the progress of processing

```
Sort Ascending or Descending? A
Processing Performance For Equities
1234
Processing Performance For Fixed Income
1234
```

```
Processing Performance For Cash Equivalents
1234
E2.LAM
E2.CSV
```

Two files are produced:

- E2.LAM is a formatted output file that can be printed, or viewed using the BROWSE function. This report file displays the AIMR return and standard deviation
- E2.CSV is a comma-separated value file. This file can be loaded into a spreadsheet program or database. This report file displays the market value plus the net time weighted contribution, which the report uses to weight both the returns and the standard deviations

Note: You may notice that there are two returns and standard deviation figures at the bottom of the AIMRFLEX report. Why don't they match? There are actually two returns and two standard deviation numbers on the AIMRFLEX report. The first return (AVERAGE) and standard deviation number (STD) are "equal-weighted," meaning that the size of the accounts does not affect the calculation. In the second return, the AIMR return (AIMR), and standard deviation, the AIMR standard deviation (STD), are the dollar-weighted calculations, which are weighted by taking the beginning market value plus net time-weighted cash flow for the current period [NCTW].

An example of E2.LAM is as follows:

```
Run Date : 03/14/06 1:44 P.M. Performance Returns and Account Values PAGE 1
January 31, 2006 to March 14, 2006
---------------------------------
TEST REPORT
Total Total Total Total Total Total
Value Return Value Return Value Return
on for on for on for
SNAM 01/31/06 01/31/06 02/28/06 02/28/06 03/14/06 03/14/06
------ -------------- -------- -------------- -------- -------------- --------
NJ003 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80
NJ005 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80
NJ006 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80
NJ007 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80
NJ008 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80
NJ001 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80
```

```
NJ009 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80

NJ010 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80

847,779,916 836,526,714 829,781,507

HIGH 349,786,698 1.69 345,273,688 -1.29 342,487,607 -0.80

LOW 19,449,180 1.60 19,083,401 -1.88 18,918,862 -0.86

MEDIAN 19,939,439 1.69 19,673,839 -1.33 19,515,731 -0.80

AVERAGE 32,606,920 1.68 32,174,104 -1.35 31,914,673 -0.81

STD 63,436,025 0.02 62,620,020 0.11 62,114,693 0.01

OBS 26 26.00 26 26.00 26 26.00

ACTS:

HIGH NJ019 NJ004 NJ019 NJ019 NJ019 NJ003

LOW NJ020 NJ020 NJ020 NJ020 NJ020 NJ020

MEDIAN NJ013 NJ013 NJ013 NJ012 NJ013 NJ012

AIMR 1.66 -1.33 -0.81

STD 0.03 0.09 0.01

SP500

DJIA

AIMR: MONTHLY COMPOSITE RETURNS ARE CALCULATED USING WEIGHTS EQUAL TO

BEGINNING VALUES ADJUSTED FOR TIME-WEIGHTED CASH FLOWS.

Run Date : 03/14/06 1:44 P.M. Performance Returns and Account Values PAGE 2

January 31, 2006 to March 10, 2006

---------------------------------

TEST REPORT

Total Total Total Total Total Total

Value Return Value Return Value Return

on for on for on for

SNAM 01/31/06 01/31/06 02/28/06 02/28/06 03/14/06 03/14/06

------ ------------- -------- ------------- -------- ------------- --------

QUARTERLY AND YEARLY RETURNS DERIVED FROM LINKING MONTHLY RETURNS.

STD: THIS SHOWS DISPERSION AROUND WEIGHTED COLUMN AVERAGES.
```

Standard deviation and the AIMRFLEX report

Standard deviation on the AIMRFLEX report calculated using several steps:

```
SumOfAllSampleData / NumberOfSamples = Average
```

```
StandardDeviation = SquareRootOfVariance
```

```
Variance = AverageValue(SameData – AverageOfSampleData)^2
```

Here is an example:

Sample Data = 1 4 5 6 9

Number of Samples = 5

Sum of Sample Data = 25

Average of Sample Data = 5

Sample Data - Average of Sample Data = -4, -1, 0, 1, 4

(Sample Data - Average of Sample Data) Squared = 16, 1, 0, 1, 16

Number of Samples = 5

Sum of (Sample Data - Average of Sample Data) Squared = 34

Average of (Sample Data - Average of Sample Data) Squared = 6.8 = Variance

Standard Deviation = Square Root (6.8) = 2.61

Finally, the formula for Standard Deviation is the same for all periods, only the input numbers will change as the returns and the number of observations changes.

Notes on using AIMRMEMO and AIMRFLEX

- When prompted for the FULL UNIVERSE, enter a command that will retrieve all managed discretionary accounts. When prompted for a SUB-UNIVERSE, you will need to select the composite to report on
- For AIMRMEMO enter the EDMEMO code or the account selection criteria that define the you are reporting on or type ALL. If you type ALL, it will report on all composite codes found in EDMEMO for the time period you are running the report for, within the full universe you have chosen
- The upper left-hand corner contains your firm name, the date and time the report was run, and the performance sector of the report (TOTAL, EQUITY ONLY, FIXED ONLY or CASH ONLY)
- The upper title line displays the year of the report, and the lower title line echoes the title information you enter while running the report. Use this lower title to describe the composite.
- Each compound quarter-to-date performance figure is calculated by linking the three monthly returns. The report may differ from hand calculations by a basis point or two, since the report uses more decimal places in its calculations.
- The compound year-to-date performance for each account is calculated by linking the monthly returns. This figure is omitted for accounts that were not managed for the full year.

- Accounts are identified by short name (SNAM). This can be changed to a more appropriate identifier (BWNUM, DTCNO) for your firm if necessary.
- Performance figures for an account are included if and only if the account was managed for the full calendar quarter in question. This can be changed to work for full months instead of quarters.
- The statistical figures are calculated down each column. This is true even of the quarterly and year-to-date columns. Those figures are all “equal-weighted”, meaning that the size of the accounts does not affect the calculation.
- The AVERAGE, MEDIAN and TOTAL VALUE figures are calculated for each quarter end. The % TOTAL compares the size of the SUB-UNIVERSE (the composite being measured) to the FULL UNIVERSE (which should be all your managed discretionary fee paying accounts). You define the full universe and sub-universe as you run the report.
- The “AIMR” line displays the AIMR-compliant composite return for each month, linking months to display quarterly or annual compliant returns. The AIMR compliant return is dollar-weighted by an account's beginning value, adjusted for contributions and withdrawals.
- This second standard deviation is the dollar-weighted standard deviation of the returns used to calculate the AIMR-compliant return.
- The benchmarks you select appear at the bottom of the report.

Running the AIMRCOMP report

AIMRCOMP reports run against composites defined using EDAC. Users create a composite by grouping its component accounts. To include an account in a composite, define the OPEDT and CLODT (opening and closing date) fields in the account master file. This approach allows for the exclusion of lost accounts.

Defining the report time frame

A composite's setup affects the AIMRCOMP report. The report includes only full calendar quarters, or full months in cases where an account manager has changed APL to report on months rather than quarters.

> **Note:** If a single account belongs in one composite for one time period and another composite for different period, create a copy of the account. Mark the copy as a retired account. Then fill in the OPEDT and CLODT fields to include the copy's performance for the appropriate period in one composite, and the original's performance in the other composite.

Defining the report scope

Before producing a report, APL prompts you for a FULL UNIVERSE and a SUB UNIVERSE. For the FULL UNIVERSE, enter a command that retrieves all managed discretionary accounts.

When prompted for a SUB-UNIVERSE, select the composite to report on. For AIMRCOMP, enter the account selection criteria for a composite--e.g. FDTYPE EQ EQUITY.

> **Note:** The report asks for both the full and sub-universe so that it can calculate the percent of total managed assets for each composite. To generate a composite return for a single composite, without reference to the larger context, use the short cut of defining both the full universe and the sub-universe identically.

To run the report:

1. Type AIMRCOMP at the WHAT NEXT? prompt, and press ENTER. The as of date prompt will appear:

```
AS OF DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

2. Type the month-end date that you wish to report through and press ENTER. The following prompt will appear:

```
ENTER FULL UNIVERSE:

1614 ACCOUNTS CURRENTLY ON FILE SEARCH FOR WHAT? MGR EQ MSP
```

3. Type the account selection criteria and press ENTER. The following prompt will appear:

```
23 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

4. Type additional commands for sorting, broadening or narrowing account selection and press ENTER. Respond to any prompts that appear. Or, type nothing and press ENTER to continue. The following prompt will appear:

```
AVAILABLE FILES; (01=TOTAL PORTF 02=EQUITIES 03=FIXED INCOM 04=CASH EQUIVA
05=TEST CODE 1 06=TEST CODE 2 07=TEST CODE 08=EQUITY CORE

2 21=TRAINING 3 22=TRAINING 4 23=TRAINING 5 24=TRAINING 6 25=TRAINING 7

26=TRAINING 8 27=TRAINING 9 28=TRAINING 10 29=TRAINING
```

5. Type the sector identifier and press ENTER. You are prompted to specify benchmarks

```
WHAT BENCHMARKS (I.E. SP500 DJIA)
```

6. If necessary, type the SNAM(s) for one or more desired benchmalk(s) at the WHAT BENCHMARK? prompt, and press ENTER. The following prompt will appear:

```
ENTER SUB-UNIVERSE:

23 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

7. Enter an account selection criteria for the composite you want to report on and press ENTER. The following prompt will appear:

```
XX RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

8. Type additional commands for sorting, broadening or narrowing the account selection and press ENTER. Respond to any prompts that appear. When you are fmished, the SUB-UNIVERSE TITLE will appear

```
SUB-UNIVERSE TITLE:
```

9. Enter the title of the composite, e.g. BALANCED ACCOUNTS, and press ENTER
10. If necessary, type the SNAM for a benchmark for this composite at the SUB¬UNIVERSE BENCHMARK prompt and press ENTER. The selected benchmark must be one that was included in the earlier benchmark selection in Step 6. The following prompt will appear:

```
COMPOSITE: MSP ACCOUNTS

SUMPRF.L00

ENTER SUB-UNIVERSE:

23 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

11. Type another composite at the COMPOSITE prompt, and press ENTER. Type nothing and press ENTER to exit

Running the AUDITAIMRCOMPS report

AUDITAIMRCOMPS compares valid GIPS codes to account selection criteria defined in a new table. The report will show any outages where accounts in a certain account range are coded with incorrect active AIMR codes.

> **Notes:**
> Use EDITMAPAIMRCOMPS to map up to three Account Master or Infodex fields to GIPS codes so that the AUDITAIMRCOMPS report can be generated. Once the fields are chosen and saved, they are hard coded and cannot be changed without programming intervention.
>
> This report may be set up as a batch job.

Mapping fields to GIPS codes using EDITMAPAIMRCOMPS

1. Type EDITMAPAIMRCOMPS at the WHAT NEXT? prompt. A menu of field names will appear
2. Pick up to three Account Master or Infodex fields to define what GIPS codes they should link to. Press F10 to save the changes. A table will appear and you are allowed to finish the mapping process
3. Insert the APL field values and corresponding composite codes. Press F10 to save the selections. These same APL fields will appear on the invalid GIPS report

Running the PMSTDEV report

1. From the WHATNEXT? prompt type PMSTDEV and press Enter
2. Type the month end date for the beginning of the report period and the end of the report period

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 01/18/11 : 01/31/09
ENDING DATE (MM/DD/YY) - HIT ENTER FOR 01/18/11 : 12/31/09
```

> **Note:** The beginning and ending date range must be within a one year period.

3. Type the account selection and press Enter. The following prompt appers:

```
XX RECORDS FOUND
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

4. Type additional commands for sorting, broadening or narrowing account selection and press Enter. If no selection will be made, press Enter
5. Type the number of the Performance sector you wish to report on and press Enter

```
Report on Which Performance Sector?
```

6. Type in the composite code you wish to report on and press Enter

```
Include Which Composites ("ALL" Selects All Composites)?
```

> **Note:** You may speclfy multiple composites separated by a space.

7. Type the SNAM, DTCNO or BWNUM and press Enter. Pressing Enter with no identifier will yield the result of SNAM

```
Select Account Identifier?
```

8. Type the code(s) for the desired performance benchmark(s). Separate multiples by a space and press EnterScreenshot

```
Enter Desired Benchmarks:
```

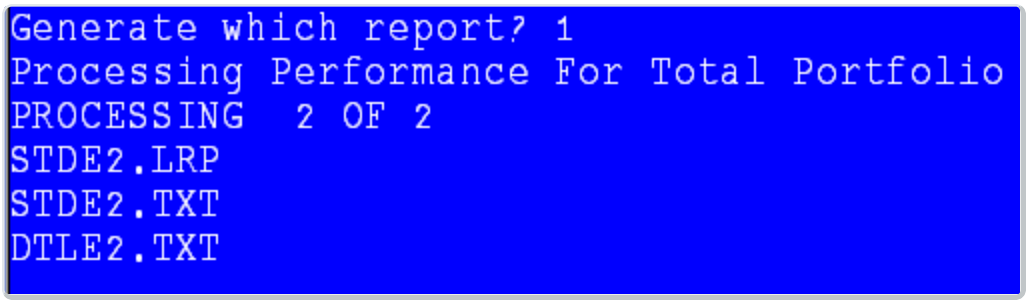
> **Note:** Up to three benchmarks may be selected (e.g. SP500, DJIAT…)

9. Type 0 to generate the Annualized 3 Year Standard Deviation Composite Summary report with extract. (STDXX.LRP and STDXX.TXT will produce)

   OR

   Type 1 to generate the Annualized 3 Year Standard Deviation Composite Summary Report. This selection will create 2 extracts: one summary and one account detail. (STDXX.LRP, STDXX.TXT and DTLXX.TXT will produce)

An extract containing the underlying portfolio level return required to calculate GIPS returns, other statistics (HI, LOW, MEDIAN, AVG) and market value data required to calculate GIPS returns will be generated



Summary Report

The summary report will display the monthly returns for each month end and quarterly returns for any calendar quarter during the period. The summary report will also display the standard deviation for a 36 month period as of each of these month ends.

To calculate standard deviation, the system will determine composite and benchmark returns for each 36 month window corresponding to each of these 12 reporting periods and calculate standard deviations for each reporting period (12 in total).

The report can be run Net or Gross of Fees.

6.8 After-tax reporting

After-tax performance is defined as the money manager's performance on equities after the client has paid taxes on gains and losses and on income received. APL after-tax performance functionality consists of:

- Calculating federal taxes to be paid on equity gains/losses and equity income received on a monthly basis
- Posting those taxes to EDGL
- Incorporating the taxes into the equity performance file so that performance reports can be created showing equity returns with or without taxes

Notes:

- After-tax reporting is an optional service. Contact your account manager for details
- Equity after-tax performance can be calculated for time periods beginning in 1998, not before and should only be calculated for taxable accounts
- All purchase date and cost information must be accurate on all tax lots sold for the system to calculate accurate EDGL tax entries

APL provides the POSTTAX function to perform these tasks. In addition, you the following functions for after-tax performance reporting are:

- PMAFTAX which shows both before and after-tax performance for a specified date range. See Running the PMAFTAX capital gains tax report on equities
- SETNETFLEX, which enables you to control whether the FEES, ALTFEES, or TAXES fields are included in performance reports. See Reporting net of fees and taxes using the SETNETFLEX function
- SETNETTAXES, which enables you to include or exclude all taxes from performance reports. See Reporting net of taxes using the SETNETTAXES function

Note: It is not necessary to run SETNETTAXES beforehand to include after-tax returns on the PMAFTAX report.

Calculating capital gain taxes using POSTTAX

This function calculates the short-term, and long-term gains or losses on all equity trades for each month in a specified time period. It then calculates a monthly tax amount based on the net monthly gain or loss amount and the federal tax rate for each term. POSTTAX also calculates monthly tax on equity income received during the month.

The function assumes that short-term gains are taxed at a rate of 35% and long term gains are taxed at a rate of 15%. The function also calculates monthly tax on equity income received during each month based on the maximum federal rate. The monthly tax amounts for short, and long-term gains or losses are posted to EDGL as a MEMO transactions on the last day of each month.

Note: The POSTTAX function can be run for transactions starting 1/1/ 98.

The EDGL transactions are posted with the following data:

Field	Description
TRDTY	MEMO – This transaction type does not affect cash
TICK	The ticker symbol depends on the type of gain or loss for Federal tax purposes: • TAXGLS – Short-term gain/loss • TAXGLL – Long term gain/loss • TAXINC – Income or dividends

Field	Description
SACUS	4059895 - Generic equity security
DATE	Last day of the month
UNITS	Defaults to 0
AMOUNT	Amount of tax paid on gains or losses; that is, the offset tax amount
DESCRIPTION	Tax on Capital Gains/Income

Posting taxes

1. At the WHAT NEXT? prompt, type POSTTAX and press ENTER. The following prompt will appear:

```
DO YOU WANT TO POST TAX AMOUNTS TO LEDGER ?
```

2. Type Y to post entries to the general ledger and press ENTER. Type N to create an audit report of transactions but to not post them to the general ledger. The following prompt will appear:

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR CURPRDATE :
```

3. Type the beginning date, which must be first of the month, and press ENTER. The following prompt will appear:

```
ENDING DATE (MM/DD/YY) - HIT ENTER FOR CURPRDATE:
```

4. Type the ending date, which must be a month-end date, and press ENTER. The following prompt will appear:

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

5. Type additional commands for sorting, broadening or narrowing the account selection and press ENTER. An audit report is created for each account named SNAM.LTX. The audit report lists all sells for the time period separated into long, and short-term gains and losses. Within each term the transactions are sorted by date. After sell transactions the income transactions are listed by date and totaled

When the performance posting functions run, they will pick up TAXGLS, TAXGLL and, TAXINC entries from EDGL and posts two net contributions (C) per month, using a month end posting date, to the equity file (01). One contribution is the sum of the TAXGL entries in EDGL. This contribution has a PORT type called TAXES. The other is the amount of the TAXINC entries in EDGL. This contribution has a PORT type called TAXESI. The contributions are negative for taxes paid and positive for losses.

Running the PMAFTAX capital gains tax report on equities

The PMAFTAX report allows you to see pre tax and post tax information.

To run this report:

1. At the WHAT NEXT? prompt, type PMAFTAX and press ENTER. The following prompt will appear:

```
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR CURPRDATE :
```

2. Type the beginning date, which must be a month-end date, and press ENTER. The following prompt will appear:

```
ENDING DATE (MM/DD/YY) - HIT ENTER FOR CURPRDATE:
```

3. Type the ending date, which must be a month-end date, and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

4. Type the account identifier or the account range and press ENTER

```
The PMTAX.LSD file is generated.
```

6.9 Standard performance reports

The following is a list of reports available to users of APL Performance Reporting as of the date of publication. For additional information on what reports are available or for more specific information on report content, contact your account manager.

Single Account Reporting

Report	Description
COVERPM	Summarizes asset mix, performance and capital changes to an account. Similar to PMCOVER, but omits cash sector and does not prompt for benchmarks. Comparative benchmarks can be hard coded
INDSECTAI	Sorts performance by industry class and compares performance to that of the S&P 500. This report must be run by our support team.

Report	Description
PMCAM	Shows cumulative dollar change
PMAFTAX	Shows both before and after tax performance for a specified date range. It is not necessary to run SETNETTAXES beforehand to get after tax returns on this report. Run report from month-end date to month-end date on equity sector
PMCOVER	Displays portfolio summary information including realized and unrealized gains and losses
PMFIRMNETFEE	Summarizes performance information, including net fees that have been charged
PMHAL	A summary of changes to an account. This report shows the beginning market value, net additions, adjusted market value and the market value at the end of the period
PMHISTSECT	Compares performance for any sector of an account to two benchmarks. Displays monthly performance for the sector of your choice plus two benchmarks
PMHISTPI	Breaks performance into principal and income components. Displays monthly performance for total, equity, fixed, and cash divided into estimated principal & income returns
PMHISTYTD	Commonly used as a one-page summary of an account's performance. Displays performance for total, equity, fixed, and cash plus three benchmarks
PMRRADV	Analyzes risk/return for an account versus appropriate benchmarks
SUMREVIEW	Shows the change in holdings, covering a period of your choosing, for an individual account or a group of accounts The report must be run using month-end dates

Multiple Account Reporting

Report	Description
FAILSAFE	Shows any differences between the market value (V) stored in the performance file versus the calculated value for the same as of date. Differences could indicate posting issues
FLAGPCT	Finds contributions or withdrawals greater than a chosen percent of market value and displays any posted locked values
PMAFTAX	Shows both before and after tax performance for a specified time frame

Report	Description
PMCAP	Summarizes capital changes and percent of performance
PMDETA	performance detail report that outlines transactions for a given period of time
PMFIRM	Gives a general summary of total performance for a specified account or group of accounts
PMFIRMFLEX	Displays a variety of performance information based on your selection.You pick the time periods, sectors, and sorting
PMFIRMSECT	Summarizes three selected sectors over a one, three, and twelve month time period
PMFIRMVAL	Displays same output as PMFIRMSECT with additional prompts for sorting accounts by Performance Measurement, value, etc
PMITDA	firm wide performance account summary that shows inception to date returns and compares the account data to that of benchmarks, as well as to S&P inception data. Displays date of inception and return since inception
PMRRA	market risk analysis report for one or more accounts
SUMREVIEW	Shows the change in holdings, covering a period of your choosing, for an individual account or a group of accounts The report must be run using month-end dates

Comparative Reporting

Report	Description
AUDITAIMRCOMPS	Compares valid GIPS codes to account selection criteria defined in a new table. The report will show any outages where accounts in a certain account range are coded with incorrect active AIMR codes
PMDIAG	Compares internal rate of returns to time- weighted returns
PMDIFF	Compares time-weighted return against two sectors for one account

Audit reporting

The following reports can be used for auditing account information.

Report	Description
AUDITLOCKED	Lists all locked values
BADDATE	Lists securities that with receive dates (RDATE) that precede the trading, or posting, dates (PDATE)
CHECKGLOPE	Verifies the General Ledger's opening position (OPE) line against the Account Master's Opening Date (OPEDT) from which performance tracking begins
PMISSUE	Lists issue types according to the performance sector that the issue types falls under
PMLOGREPORT	Lists missing prices found during performance posting
PMSECTCHECK	Allows you to verify that all security issue types for assets held are mapped to a performance sector. Displays the performance sectors, lists security issue types are included in each sector, lists securities that are owned and not included in basic sectors, and lists securities that are included in more than one basic sector
PRICEXCEPT	Shows the percentage change of a security's price from one date to another. This report can aid in finding securities with bad prices
STKRECORD	Shows all securities help by a specified group of accounts
TBGREVIEW	Analyzes gains/losses on a per security basis using market value only. Does not apply the Modified Dietz calculation but it is helpful when troubleshooting an incorrect return by sorting by the percent gain and looking for securities that have exaggerated returns for a given period of time. Forumla used is: GAIN / (Beginning Value + Dollars Invested) Where: GAIN = (Ending Value + Dollars Sold) - (Beginning Value + Dollars Invested)
TRANPEN	EDPORT and General Ledger activity report for a specified time period
TRANSGLDES	General Ledger activity report
ZEROPRICELIST	Security Master report listing zero price securities
ZERORCVDLV	Lists securities with no EDPORT receive cost (RCOST) and deliver value (DPROC)

GIPS-compliant reporting

Report	Description
AIMRCOMP	Composite report that uses user-specified selection criteria and EDAC data to

Report	Description
	facilitate GIPS-compliant reporting. This report does not accommodate EDMEMO coding
AIMRFLEX	Measures performance of accounts in more than one composite
AIMRMEMO	Measures performance of account composites based on table data defined using EDMEMO
AIMRMGR	Measures the performance of composites by manager
PMSTDEV	3 year annualized standard deviation report. The summary report will show monthly and quarterly return data as well as 3 year annualized standard deviation with related benchmark data
EDITMAPAIMRCOMPS	Shows outages where accounts in a certain account selection are coded with incorrect active GIPS codes

Other performance reports

Report	Description
PMFIRMMLC	Displays weighted beginning performance values for selected sectors displayed in dollars. Shows firm wide performance for total, month-to-date and year-to-date values according to the selected sectors
PMFIRMPCT	Display weighted beginning performance values for selected sectors displayed in percentages. Shows firm wide performance for total, month-to-date and year-to-date percentages according to the selected sectors
PMISSUE	Lists issue types according to the performance sector that issue type falls under. PMISSUE can be sorted by report, in numeric or alpha order. It can also be printed
PMSUM	Summarizes performance according to fund type

6.10 Using performance-specific account selection variables to aid account selection

You can use GIPS codes to run various non-GIPS performance reports if you use the \WHOAIMR and the \WHOMEMO variables for account selection.

The \WHOMEMO variable can be used to select accounts by using a given GIPS code to run a report.

Below is an example of the \WHOMEMO functionality that would produce a report within EDMEMO, displaying account inclusion in a given AIMR composite:

```
WHAT NEXT? EDMEMO

9999 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT? RR LT 99

99999 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP): AND

AND WHAT? \WHOMEMO

ENTER EDMEMO CODES: AIMR

ENTER PARTIAL DESCRIPTION (OR <RETURN> FOR NONE): ABC {enter AIMR code}

SEARCHING EDMEMO

PLEASE WAIT...

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP): { enter }

EDIT OR PRINT ? P

SCAN FOR SPECIFIC FIELDS(E.G. RESTRC OR <RET> FOR ALL):  { enter }

PROCESSING 99 OF 99

EDMEMO.LRP

WHAT NEXT? BROWSE
```

The output from this report will include both current and historical accounts in the ABC composite. To only include accounts that are currently in a given composite, \WHOAIMR should be used, as described below.

```
================================================================================

LNAME= XYZ PENSION FND

SNAM= XYZ
```

```
MEMOS/NOTES

-----------------------------

AIMR: ABC 12/31/89

================================================================================

LNAME= GHI PARTNERSHIP

SNAM= GHI

MEMOS/NOTES

-----------------------------

AIMR: ABC 12/31/02 12/31/04
```

The \WHOAIMR variable allows you to produce non-AIMR reports, such as the PMFIRMFLEX report, for accounts given AIMR composite.

The results of this report include all accounts that were in the ABC composite for the periods chosen when running the remainder of the PMFIRMFLEX report.

```
WHAT NEXT(***NEW MAIL HAS ARRIVED***)? PMFIRMFLEX

INCLUDE ACCOUNTS NOT IN WHOLE PERIOD ? N

AS OF DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 : 09/30/05

9999 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT? RR LT 99

999 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP): AND

AND WHAT? \WHOAIMR

BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 : 6/30

ENDING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 : 9/30

INCLUDE ONLY THOSE ACCOUNTS THAT HAVE BEEN IN A COMPOSITE FOR THE ENTIRE
PERIOD ? Y

ENTER COMPOSITES: ABC

999 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT? RR LT 99

99 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

The report output will include the following:

```
Account Market Value Return

---------- --------------- --------

ACCOUNT A 1,347,241 -1.93

ACCOUNT B 912,109 -1.14

ACCOUNT C 31,126,967 -1.04

------------- ------------ ------

MEDIAN 1,064,466 -0.69

AVERAGE 1,972,002 -0.51

STD 0.87

NUMBER 79 79

TOTAL 155,788,159
```

The \WHOMEMO and \WHOAMIR variables allow for greater flexibility in account selection when running non-AIMR reports.

Modifying the alternate start date

On occasion an account will undergo a change to its investment strategy, manager or other significant change that requires performance to be reported as of a specific date. To report performance from the date of the change rather than the actual inception date of the account, you may set up one or more performance segments for an account to track performance after a style or manager change date. Historical performance data is maintained while avoiding the necessity of closing and then reopening an account as was previously required within APL to achieve the same results.

Once a segment has been defined and applied to an account, the user can run one of three performance reports, PMHISTPI, PMHISTSECT or PMFIRMFLEX, that will display performance results and identify the performance segment being used. Using a variety of new functions, APL users may set up a name, description and start date for each desired performance segment. Market values and accruals may then be posted for each performance sector as of the performance segment start date.

In order to setup the alternative start date functionality, you will need to run several functions in the following order:

1. Run EDPERFSEGLIST to establish the segment name and description that will be used across all accounts. See Establishing segments using the EDPERFSEGLIST function
2. If you need to establish a new segement period for a single account, run EDITPERFSEG. If you need to establish it for multiple accounts, please refer to the next step. See Defining and editing segment periods on a per account basis using EDITPERFSEG
3. If you need to establish a new segment period for multiple accounts, run ADDPERFSEG. See Defining and editing segment periods for multiple accounts using ADDPERFSEG

Establishing segments using the EDPERFSEGLIST function

Run the EDPERFSEGLIST function from the WHAT NEXT? prompt to open a table that allows for the setup of a standard segment name and description to be used across multiple accounts. The purpose of this function is to keep the segment name and description standard for all accounts.

> **Note:** You cannot remove a segment name and description from this table if it is in use by one or more accounts.

```
SEGMENT NAME CHOICES EDITOR

SEGMNT    SEGMNT

NAME      DESCRIPTION

-------   ----------

MSPMSP    START

OBJ       OBJECTIVE CHANGE

SMCAP     SMALL CAP

LGVAL     LARGE VALUE

--------------------------------------------------------------------------------
-

F-3 Exit  F-10 Save
```

Column	Description
SEGMNT NAME	Short name for the segment. This name can have up to six characters
SEGMNT DESCRIPTION	Descriptive name of the segment. The description can contain up to 50 characters

Defining and editing segment periods on a per account basis using EDITPERFSEG

Run this function to define and edit segment periods on a per account basis. You may use this function to add segments for multiple accounts as well, but ADDPERFSEG was specifically developed for multiple accounts. The segment name and description must exist in the EDPERFSEGLIST table before using this function or you will get a “There are no Segments defined!” message.

> **Note:** If there are multiple performance segments, the segment with the most recent date is the effective performance segment.

Different segments cannot have the same start date; they must be unique.

1. Type EDITPERFSEG at the WHAT NEXT? prompt. The account selection screen will appear

```
+-------------------------------------------------------------------+
|SELECT ACCOUNTS BY SNAM, BWNUM OR ACCOUNT PROFILE FIELDS   |
|--------------------+----------------------------------------------|
|FUNCTION: AND       |SEARCH:|
|--------------------+----------------------------------------------|
|1614 RECORDS FOUND|
||
||
||
||
||
||
||
||
||
|-------------------------------------------------------------------|
|Esc-Abort F1-Help F10-Go F5-Macro F7-List SF7-Prt F8-Sort SF8-Back |
+-------------------------------------------------------------------+
```

2. Input the account selection criteria and press ENTER. Add additional criteria if needed. Press F10 to proceed. The Performance Segment Screen will appear

```
Performance Segment Screen Account 1
------------------------- of 1
Account Snam : NJ001
Account Number : BLANK BLANK
Account BWNUM : -001550
Account Name : NJ001
```

```
Start

Name Date Description

------ ---------- ----------------------------------------

--------------------------------------------------------------------------------
-

F-6 Insert Line SF-6 Delete Line

F-3 Exit F-7 Previous Account

F-8 Next Account F-10 Save
```

3. Input short performance segment name. (This was the SEGMT NAME entered in the EDPERFSEGLIST table.) Also enter the Start Date for the new performance change. The Description field will automatically populate once you save the changes
4. Press F10 to save the changes

Defining and editing segment periods for multiple accounts using ADDPERFSEG

Run the ADDPERFSEG function to define and edit segment periods for multiple accounts. It serves the same purpose as the EDITPERFSEG function but will allow you to add performance segments for many accounts at once.

To run this function:

1. Type ADDPERFSEG is typed at the WHAT NEXT? prompt. A menu will appear listing the segments that you added in the EDPERFSEGLIST table

```
+-------------------------------+

|Pick the Segment you want to add|

|-------------------------------|

| MSP -MSP START |

| OBJ -OBJECTIVE CHANGE |

| SMCAP -SMALL CAP |

| LGVAL -LARGE VALUE |

+-------------------------------+
```

2. Choose the segment from the menu that you wish to add and press ENTER. You are prompted for a segment date.

```
Enter Performance Segment Date - HIT ENTER FOR 09/11/17 :
```

3. Enter the segment date and press ENTER. You are prompted for an account selection

```
1614 ACCOUNTS CURRENTLY ON FILE
SEARCH FOR WHAT? MGR EQ MSP
```

4. Input the account selection and press ENTER. At the NEXT OPERATION prompt, further narrow or expand the search. Or, type nothing the press ENTER to continue

You receive a confirmation prompt asking you to verify that you want to add the segment.

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
Performance Segment Info:
Segment Name  : MSP
Segment Date: 09/11/17
Segment Description : MSP START
Are You Sure You Want to Add This Segment ?
```

5. Type Y to add the segement or N to exit without saving. The change is written to the ADDSEG.LRP report file

```
Performance Segment Info:
Segment Name : MSP
Segment Date : 03/16/06
Segment Description : MSP START
Performance Segment Added to the Selected Accounts
SNAM
------
MSPTST
CIFRMI
MSP1
MSP2
MSP3
MSP4
MSP5
```

```
MSP6
MSP7
MSP8
MSP9
MSP10
MSP11
MSP12
MSP13
MSP14
MSP15
MSP16
MSP17
MSP18
MSP19
MSP20
MSPTS2
--------------------------------------------------------------------------------
-------------
PRESS <ESC> TO EXIT <F1> FOR HELP <F3> MAIN MENU
```

This function produces an output report called ADDSEG.LRP, which contains the SNAM's of the accounts that were added, as well as a description of the performance segment.

> **Note:** Use the SHOWPERFDATES report to display the most recent performance segments in effect for one or more accounts.

Including segment performance returns In the PMHISTPI, PMHISTSECT, and PMFIRMFLEX Reports

In order for the PMHISTPI, PMHISTSECT and PMFIRMFLEX to include all performance returns, or those for a specific segment, you must run the SETPERFSEG function prior to running these reports.

To run this function:

1. Type SETPERFSEG at the WHAT NEXT prompt?

```
Include All Performance Returns or Segment Performance Returns?
```

2. Type A for all segments or S for segment. Press ENTER. The change is made

Option	Description
A	ALL. The entire performance history of the account will be taken into account for reporting. Choosing ALL will cause the reports to essentially ignore the SEGMENT values in the performance file, and output data will be just as it would now, without taking into account any alternative start dates
S	SEGMENT. If chosen, the user will be prompted for a date. This date will then bring in the performance period that was in effect at that time. It is not necessary to use the performance segment start date. Any date within a performance segment period may be used if there is a value in EDPMSECT for that date

> **Note:** The PMFIRMFLEX is a performance report that may be used for multiple accounts, thus, it will not display the actual name and description of the performance segment in effect for each account. It will display the date that is used in SETPERFSEG. You may use the SHOWPERFDATES report to identify the individual performance sectors in effect for each account.

As always, test this functionality on a sample account. Once the testing process is complete, performance reports should be thoroughly reviewed for accuracy. If the reports are acceptable, then you should proceed with running the same function on the live accounts.

Removing performance segments across accounts

To remove performance segments across accounts, use the RMPERFSEG function.

> **Note:** When using this function to remove performance segments, the performance segment name, description and date need to be accurate in order to successfully remove it. If the segment name, description or date information is incorrectly input, the RMPERFSEG function will produce an output report called FAILRM.LRP. This output will display the account SNAM's where the function failed to remove the performance segment.

To run this function:

```
WHAT NEXT? RMPERFSEG

50000 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT? RR LT 10

7 RECORDS FOUND
```

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
Enter Performance Segment Name: MSP
Enter Performance Segment Date - HIT ENTER FOR 09/11/17: 20040715
Enter Performance Segment Description: MSP START
Performance Segment Info:
```

1. Type RMPERFSEG at the WHAT NEXT? prompt. You are prompted for an account selection

```
SEARCH FOR WHAT?
```

2. Type the account selection and press ENTER. You will receive a series of prompts asking you to confirm that segment information

```
Enter Performance Segment Name :
```

3. Enter the performance segment name. This is the short name for the segment that you created on the EDPERFSEGLIST table. You are then asked to verify the date associated with the performance segment

```
Enter Performance Segment Date - HIT ENTER FOR 09/11/17 :
```

4. Input the date and press ENTER. This is the number you entered when running EDITPERFSEG or ADDPERFSEG. You are then prompted for the segment description

```
Enter Performance Segment Description : MSP START
```

5. Input the description as entered on the EDPERFSEFLIST table. Press ENTER. A message will appear asking you to verify that the information you wish to remove is correct

```
Performance Segment Info:
Segment Name  : MSP
Segment Date: 09/11/17
Segment Description : MSP START
Are You Sure You Want to Remove This Segment ?
```

6. Type Y to continue with the removal or N to exit without saving. You receive a message confirming the removal

```
Removing Segment from the Selected Accounts
```

```
Please Wait...

Performance Segment Removed from 23 of 23 Selected Accounts
```

6.11 Closing accounts with regards to performance files

While most clients create their own procedures to close accounts and then protect the information in the performance files, following is a general outline followed by numerous clients:

1. Update CLODT for the date the account closed. For example, an account closing on December 02, 2005 should have the CLODT updated to 20051202 in EDAC. This is done on the next business day
2. Update RR code to 99 (closed) on the business day after the account closes
3. Post performance on the business day after the account closes to update the last market value to the performance file as of the close date (20051202 in this example). The step of posting the account after changing to RR EQ 99 will capture the last contribution/withdrawal flows, which is particularly important if the account is part of a performance combo group
4. Insert a WALLDT in Infodex to protect performance files from continuing to post as further protection beyond the RR code change

   A WALLDT entered in INFODEX is used on an account by account basis to protect performance data. A WALLDT of 20050532 (always month-end date plus one day) will protect all market values and returns on 5/31/05 and prior to that from ever being inadvertently changed.

   For a specific account, to add a WALLDT, from the Expert menu go to INFODEX. Then choose #3 QUICK EDIT, then "Infodex: Client Database," followed by answering NO to the next "cross search" prompt. Enter the account number you would like to add the WALLDT. F10: to search. Place the cursor over " Account Level Performance Wall Date (WALLDT)" press the enter key and then press F10 key. Enter or change the WALLDT in the YYYY/MM/DD format. Use F10 to Save.

5. Finally, when a market value enters EDPMSECT due to a residual accrual after an account has been closed, the market value occurring after the closing date in EDPMSECT should be zeroed out and a WALLDT placed to protect this manual change

Chapter 7: Troubleshooting Performance Issues

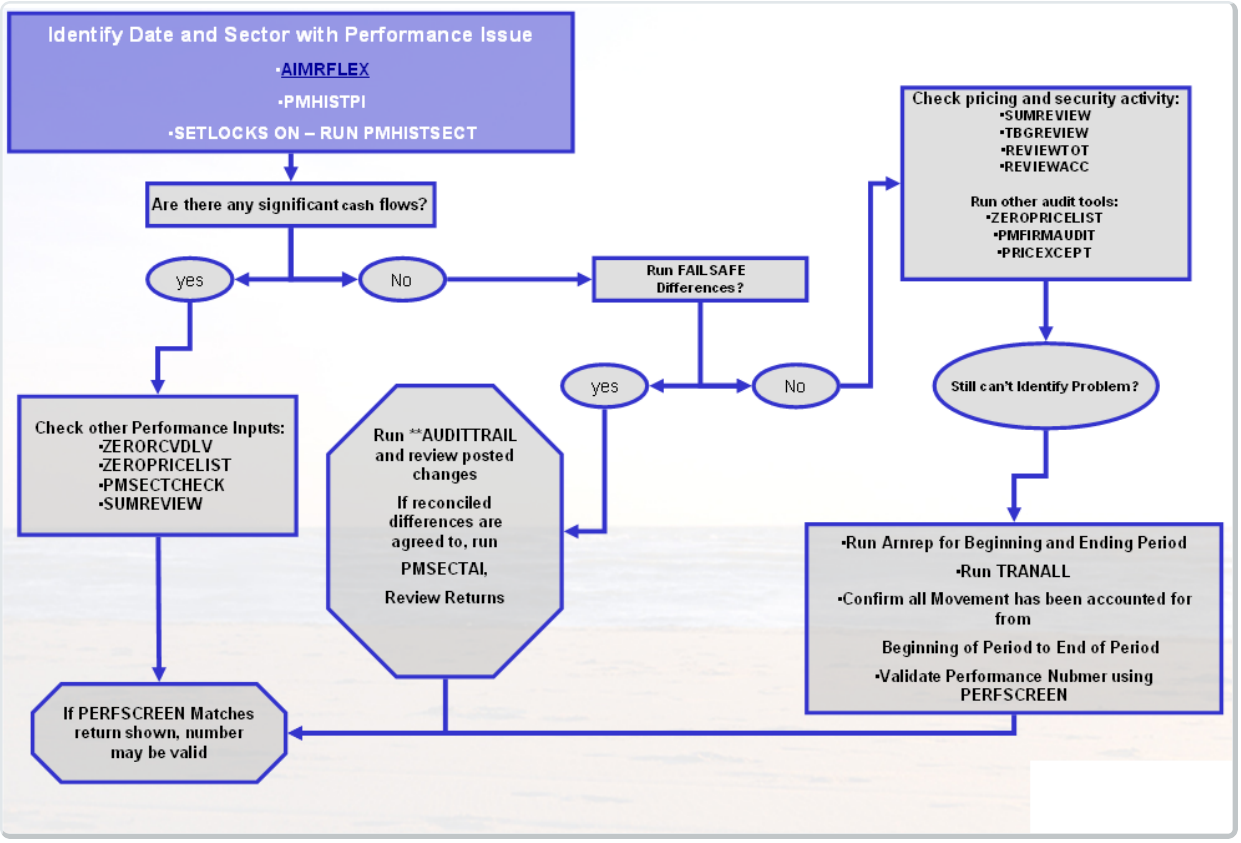
This chapter has been included to help you research an account that will appear to have a return that is not in line with other accounts that are similarly invested. When researching performance issues, it is important to revisit several assumptions:

- APL calculates performance using the Modified Dietz formula
- All cash flow are beginning of day (BOD)

Typically, the inputs into the Modified Dietz calculation are what result in a return that is inconsistent with other accounts that are similarly invested. Thus, let us revisit the values that impact the performance of an account:

- Closing Price
- Purchase Price
- Sale Price
- Security receive/deliver value
- Back dated entries

The following diagram explains the suggested troubleshooting process.



7.1 Methodology

1. Create a test account on which to test changes. Please refer to Protecting data with test accounts for additional information on how to do this
2. Follow the Performance Matrix chart until the return is reconciled
3. Look for any significant cash flows into and out of the account. This is important to identify because in the event of significant cash flows, the system revalues the portfolio and the sub-periods are linked to create the return. Depending on market movement and the magnitude of the flow, the fact that IS assumes a BOD assumption for flows can be the reason the returns look out of line. There are a few reports that will be helpful in looking at the inputs that may have been impacted by the flow:

- ZERORCVDLV
- ZEROPRICELIST
- PMSECTCHECK
- BADP.LLL
- SECTISS.LRP
- SUMREVIEW

Please refer to Reports frequently used in troubleshooting performance issues for an overview of each report listed.

4. If the return is still in question, verify the return by comparing the PMHISTSECT report with the SETLOCKSON settings for the given account, time period, and sector to the return achieved in PERFSCREEN. This will quickly narrow the time period which will be examined for incorrect information
5. If the return does look incorrect, confirm that the market values in the EDPMSECT performance files are correct by comparing value to holdings reports (ARNREP, AUDIT or comparable) for the beginning and ending valuation dates. Specific areas to focus on would be securities with incorrect or missing prices as of these valuation dates, as well as unsupervised holdings that are not included in performance files
6. Next, reconcile the net contributions and withdrawals in the EDPMSECT performance files with the information on the transactions reports (TRANPEN or TRANALL) for the given time period. This will insure that all flows are accurately accounted for in the EDPMSECT files

Notes:
"Follow the Money." This is a helpful expression to keep in mind when trying to troubleshoot performance issues. Where did the market value go during this time period? There was either appreciation/depreciation to explain the change or cash and/or securities left the account.

If all balances and cash flow numbers tie out, the return may be correct or a flow (deliver/receive value, a fee, purchase/sale amount, contribution/withdrawal) may be incorrect or incorrectly entered. When beginning and ending balances are correct, the cash flow amount that would make the return correct may be "backed into" and that amount can then be searched for, which will expedite resolution time.

7. Once you find the cause of the incorrect return, decide upon and implement a solution to correct the performance. Remember to use a test account and/or contact a member of our team if there is any chance of losing performance file data

7.2 Reports frequently used in troubleshooting performance issues

Report	Description
ZERORCVDLV	Identifies securities missing prices on the receive/deliver date. Report reads data from EDPORT
ZEROPRICELIST	Security Master report that lists securities with zero prices for a specific as-of date. This is a good report to run before posting performance to ensure that you have complete pricing information
PMSECTCHECK	Checks securities and sectors
BADP.LLL	(Which report generates this file?) Lists securities not accounted for in a sub-sector
SECTISS.LRP	(Which report generates this file?) Lists the private security issue type sector table

Report	Description
SUMREVIEW	This report shows the change in holdings, covering a period of your choosing, for an individual account or a group of accounts. The report must be run using month-end dates. **Note:** If you sort by percent contribution, the report will rank the holdings for the period based on the weighting and the price-only return. This is a good indicator of holdings that helped, or hurt, the performance for the period. Related Report(s): REVIEWTOT, REVIEWACC, TBGREVIEW (Should these be mentioned in more detail?) ■ If everything on this report looks okay, use PERFSCREEN to calculate sub-period returns and link to validate return is good ■ If there are no significant cash flows, run a FAILSAFE report. This report compares the market value in the P01 file to the current calculated (i.e., ARNREP). Differences in this report are an indication of backdated entries or entries posted after the performance file was updated
FAILSAFE	This report shows any differences between the version stored in the performance file verses the calculated value for the same as of date. Differences could indicate that an entry has been posted to the account, as of, and performance was not posted after the entry. Run **AUDITTRAIL and review any posted changes. If you agree with the changes, then run PMSECTAI and review the returns. If there are no differences in the FAILSAFE, check pricing and security activity for the period against the SUMREVIEW report which provides price-only attribution report for a composite of accounts. Other similar reports that may assist your efforts include: TBGREVIEW, REVIEWTOT, REVIEWACC Also consider running ZEROPRICELIST, PMFIRMAUDIT, and PRICEXCEPT.
PRICEXCEPT	This report shows the percentage change from one date to another. This report, when run and/or sorted by issue type, is a good tool to look for securities with bad prices. If you still cannot identify a problem, the return may be correct. Other reports you can run to determine accuracy are: • ARNREP for beginning and ending period • TRANALL or TRANPEN for transactions for the period in question • PERFSCREEN to validate the performance number

Report	Description
TBGREVIEW	Analyzes gains and losses on a per-security basis while listing holdings for two specified dates
REVIEWTOT	A gain/loss report that analyzes gains and losses by security, including income
REVIEWACC	Reviews accruals for securities held in an account. The report lists principal and accrual values, costs and interest, as well as total changes in accrual amounts
PMFIRMAUDIT	This firm-wide audit report details accounts outside a certain tolerance range, as compared to a benchmark. This report is based on the PMFIRMFLEX report
ARNREP	ARNREP is a tax-lot holdings report showing accrued interest and dividends
TRANALL	TRANALL outputs three report files: • SNAM.LTA lists sales and maturations of securities • SNAM.LTB lists purchases • SNAM.LTE lists stock splits, dividends and reorganizations that have been processed
TRANPEN	Report that shows EDPORT and General Ledger activity for a specified period of time. This is useful because it shows security and cash transactions in the same report
TRANSGLDES	General Ledger activity report. This is a good report because it allows you to select a trade type (DIV, INT, etc.) that you would like to view
CHECKGLOPE	Report that finds problems with the OPE line in the General Ledger and the OPEDT in EDAC. The OPE line is the opening cash balance in the account. The OPEDT is the date the manager begins to manage the account. Problem dates are typically weekends and cases where there is General Ledger activity prior to the OPE line
BADDATE	EDPORT report that shows RDATEs that are before PDATEs and illegal dates. An example of an illegal date would be the 32nd of the month or a date where the month and/or day are missing
STKRECORD	Security Master report that lists all securities held by a group of accounts
PMISSUE	Lists issue types according to the performance sector that issue type falls under. PMISSUE can be sorted by report, numeric or alphabetical order as well as printed
PMSECTCHECK	Security Master report that shows securities mapped to sectors that are not valid according to APL's Issue Type Table in PMISSUE. The ISSTY is a number code established by APL to track different types of securities

7.3 Researching performance problems

This section provides an outline on the steps to follow when researching problems with performance data.

When you have reviewed your reports and have identified a possible problem, there are several steps that should be taken to assist in isolating the problem.

1. Run PMSECTAI. This will assure that any changes to EDGL, EDPORT or the Security Master File have been updated to the performance files. This will also provide a PMLOG report file that can be viewed or printed. It contains any missing prices as well as locked values being posted for the account

If the problem is farther back than 120 days, contact your account manager to post performance for this period.

2. Check Receive and Deliver Values by running AUDITAC. If discrepancy is found, take the necessary steps to correct and re- run PMSECTAI
3. Check Security Prices by running PRGAIN to look for large swings in PR price between periods. If discrepancy is found, correct the price using EDITSEC (EDSEC for multiple securities) and re-run PMSECTAI
4. Check the General Ledger by running CHECKGLOPE to make sure there is an OPE entry in the general ledger. Also run CASHLEDGR to look for large contributions and/or withdrawals. If a discrepancy is found, correct using FIXGL and POSTGL and re- run PMSECTAI

If the problem is still undetermined and Steps 1-4 were followed, validate performance number using PERFSCREEN. If the number on PERFSCREEN matches the number on the performance report, the number may be valid. If it does not, contact your account manager.

Other helpful reports for researching performance problems are:

- ARNREP
- PMDET
- PMHISTPI
- PMHISTSECT
- REVIEWACC
- REVIEWTOT
- TBGREVIEW

7.4 Correcting Performance Posting Errors

If the data on the PMLOG.PRT file is too long to read, or if you want to see it in an more organized way, you can run PMLOGREPORT. The report shows missing prices for the accounts that had performance posted most recently. The report goes into a file called PMLOG.LLL.

The Missing Price Error

Typically, the only error that occurs when users post performance is a missing price error. The PMLOG report identifies securities with missing prices in the accounts covered by the most recent performance posting. The report also gives the date of the missing price, as shown in the example below. Once you locate such an error, use EDITSEC or EDSEC to correct the missing price and post performance again.

Example:

```
MISSING PRICE FOR PROCT 10/31/98 ON FOLLOWING:
938200AP7  OKWA03  (380123)  OK WASHINGTON CO MED AUTH   6.25%   11/01/03
```

7.5 Using the TBGREVIEW report to troubleshoot performance issues

The TBGREVIEW report is one that analyzes gains/losses on a per security basis using only the market value. This report does not look at EDGL, so dividends and interest payments are not being factored into the percent change.

> **Note:** This report does not apply the Modified Dietz calculation, which is the basis for all portfolio level performance calculations on the PMHISTPI, PMHISTSECT and PMFIRMFLEX reports. As such, the total return at the bottom of the TBGREVIEW report will not match any return on the portfolio level performance reports.

The TBGREVIEW report is useful when troubleshooting an incorrect return by sorting by the percent gain and looking for securities that have exaggerated returns for a given period of time.

```
TBGREVIEW = GAIN / (Beginning Value + Dollars Invested)
```

```
GAIN = (Ending Value + Dollars Sold) - (Beginning Value + Dollars Invested).
```

7.6 Reconciling sector returns with the total return

In APL, each sector's performance returns are calculated independent of one another. Since the definition of a flow differs according to the sector being reviewed, total returns may differ from the other sectors. For example, equity and fixed returns consider purchases and sales as contributions and withdrawals while total sector does not. This can indicate that different returns in these sectors could be due to market timing. The total return is not calculated by weighting the returns in the other sectors.

7.7 Protecting data with test accounts

When making changes or corrections to data files, including alterations of the performance files (EDPMSECT), we strongly recommend the account in question be copied to a test account and tested there prior to being implemented on the live account. The use of test accounts provides users with a safe, dynamic and flexible tool for troubleshooting incorrect returns, properly coding AIMR entries in EDMEMO and various other endeavors, which should not be experimented with on live data.

To copy account data using COPYACT:

1. At the APL Expert WHICH FUNCTION:? prompt, type COPYACT and press ENTER. The following will appear:

```
Enter Account to Copy From:

XXXX ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

2. Enter the account selection criteria for the accounts you want to copy. You can enter more than one account; however, only one new account is formed. The following will appear:

```
NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

3. Press ENTER. Normally, at the NEXT OPERATION prompt, you can sort the accounts or broaden or narrow the account selection. However, in this case, these functions are not necessary. The following prompt will appear:

```
Enter Account to Copy To:

XXXX ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

4. Enter the account identifier for the account to which the data should be copied, and press ENTER. The following will appear:

```
Are You Sure You Want to Erase All Data in Account XXXXXX?
```

...where XXXXXX is the short name (SNAM) of the account entered in step 4. If you are sure you want to erase the data in the account, type Y or YES and press ENTER. Otherwise, type N for NO and press ENTER.

- If you type NO, you are returned to the APL Expert WHICH FUNCTION:? prompt
- If you type YES, and entered only one account in step 2, the following prompt will appear:

5. If you want to copy the account profile data in addition to the account portfolio data, enter Y or YES. Otherwise, enter N or NO

> **Note:** Keep in mind that if you copy account profile data, you will have two accounts with identical information. This means that transactions hit both accounts or miss both accounts, depending on what you are doing.

Messages appear on the screen that data is being combined. When copying is complete, you are returned to the APL Expert WHICH FUNCTION:? prompt.

7.8 Deleting test accounts by using PURACCT

Once you are finished with the test account, you may use PURACCT to purge At the APL Expert WHICH FUNCTION:? prompt, type PURACCT and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

6. Enter the account selection criteria for the account(s) you want to purge from the system. The following message will appear:

```
YOU HAVE SELECTED:
[The selected account short names will appear here]
DO YOU REALLY WISH TO PURGE ALL OF THESE ACCOUNT(S)?
```

7. If you are sure you want to delete all of the selected accounts, enter YES. Otherwise, enter NO

```
PURGING THESE ACCOUNT(S) FROM THE SYSTEM!!
```

If you selected YES, the following message will appear: When the purge is complete, the following message will appear:

```
PURGE DONE ...
```

You are returned to the APL Expert WHICH FUNCTION:? prompt.

Chapter 8: FTID Benchmarks

This chapter describes how to set up a benchmark account with benchmarks maintained by FT Interactive Data (FTID), formerly Muller. This section also contains a list of available FTID benchmarks.

8.1 Setting up an account with FTID benchmarks with EDFEND

As with other benchmarks, those provided by FTID are addressed using security codes. These codes can be found in the BW:SECMIS security database. Typically, you access these benchmarks by setting up a special account to contain them.

The benchmark account is linked to the security by specifying the appropriate CUSIP number. You can find these numbers using the following procedure:

1. At the WHAT NEXT? prompt, type EDFEND and press ENTER. The following prompt will appear:

```
SEARCH WHICH FILE (BLANK FOR HELP, 'ALL' FOR ALL FILES):
```

2. Type BW:SECMIS and press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

3. Type ISSTY EQ 2 and press ENTER. The following prompt will appear:

```
NEXT OPERATION (RETURN WHEN DONE, OR HELP):
```

4. Enter AND and press ENTER. The following will appear:

```
AND WHAT?
```

5. Enter PRICDT EQ YYYYMMDD, where YYYYMMDD is the actual current closing price date, and press ENTER

For example, if you are running the report on 12/04/02 and want the most recent closing prices, you would enter 20020302. This will assure the list is of the most recently priced indices.

The following prompt will appear:

```
NEXT OPERATION (RETURN WHEN DONE, OR HELP):
```

6. Type SORT and press ENTER. The following prompt will appear:

```
SORT BY WHAT ?
```

7. Type DES01 and press ENTER. The following prompt will will appear:

```
ASCENDING OR DESCENDING?
```

8. Type A and press ENTER. The following prompt will appear:

```
NEXT OPERATION (RETURN WHEN DONE, OR HELP):
```

9. Press ENTER. The following prompt will appear:

```
EDIT WHICH FIELDS: (? TO LIST FIELDS, RETURN TO QUIT):
```

10. Type CUSIP1 CUSIP2 TICK and press ENTER. A list of the indices that meet these criteria will appear. The cursor will be on the last line of the list, which should be blank
11. To produce a hard copy of the list, type **COPY and press ENTER. The following prompt will appear:

```
PRINT THIS INFO SINGLE, DOUBLE OR TRIPLE SPACED?
```

12. Type S for single space, D for double space or T for triple space and press ENTER. The following prompt will appear:

```
ENTER NEW DEFAULT PRINT QUEUE?
```

13. Enter in the name of the printer to which the “report” should print and press ENTER
14. Type HOLD and press ENTER to suspend printing. The following prompt will appear:

```
INCLUDE NUMBERS ON THE LEFT ?
```

15. To include numbers, type Y and press ENTER. To exclude numbers, type N and press ENTER
16. Type (Q and press ENTER to exit the function. The following prompt will appear:

```
EDIT WHICH FIELDS: (? TO LIST FIELDS, RETURN TO QUIT):
```

17. Press ENTER. The following prompt will appear:

```
SEARCH FOR WHAT?
```

18. Press ENTER

8.2 Setting up a FTID benchmark account with NEWACCT

The benchmark account is set up in the same manner as an active account. The differences are no portfolio data (EDPORT), no general ledger data (EDGL) and performance data only in the Manual sector (PM).

Use the following steps:

1. At the APL Expert WHAT NEXT? prompt, type NEWACCT and press ENTER. The NEWACCT editor will appear:

```
WHICH FUNCTION: ? NEWACCT

NEWACCT

TYPE *HELP FOR FOLLOWING MESSAGE:

ENTER INFO INDICATED FOR EACH NEW ACCOUNT TO ADD

SELL CODE: 1=LIFO, 2=FIFO, 3=MINTAX, 4=HIGH COST, 5=AVG COST, 6=LOW COST SHORT
NAMES WILL BE CHECKED FOR UNIQUENESS AFTER CLOSE OUT

(0)    SNAM    ACNUMRR   SELL TITLE

(1)    ----    -------- ---- -----

(2)
```

2. Data for each benchmark is entered on a single line, separated by a single space. The system will automatically align the columns. Use the following values:

Field	Description
SNAM	The pre-assigned short name for the FTID benchmark
ACNUM	0 for the account number
RR	100 for the registered representative
SELL	0 for the sell code
TITLE	Name of the benchmark. Name can be no longer than 40 characters, including spaces. This should be kept in mind as the name of the benchmark can be truncated on reports that do not allow enough space for the entire benchmark name

3. Type (Q and press ENTER to save data
4. Type (Q and press ENTER to exit editor. The system will automatically run the POSTGL function. Since this is a benchmark account, there is no data required and the function can be exited

5. Type (Q and press ENTER to save the OPE entry posted for the account
6. Type (Q and press ENTER to exit the editor. The following prompt will appear:

```
DO YOU WANT TO POST THESE ENTRIES NOW?
```

> **Note:** The OPE line does not have the same meaning as with active accounts. Therefore, it is optional whether or not the entry is posted.

7. Choose one of the following options
   - To not post entries, type N and press ENTER. If you choose not to post the entry, a file is created with the entry and is stored under the name POSTGL.P#, where # is the populated based on the number of times POSTGL is run during an APL session. For example, an active account is set up but the OPE entry is not posted. If this is the first time POSTGL is being running during the current APL Session, the file will be named POSTGL.P01. The next time POSTGL is run, during the same APL session, the file will be named POSTGL.P02
   - To post the entries, type Y and press ENTER
8. **If the client is set up to use INFODEX**, the system will go to the INFODEX Account Master Screen. Since this is a benchmark, it does not have to be set up in INFODEX. Press F3 to exit the INFODEX Account Master screen; then select No to not save changes.
9. The following prompt will appear:

```
DO YOU WANT TO RUN UPDATENEW NOW?
```

10. UPDATENEW updates Windows to include the account for use in reporting and/or trading. Since this is benchmark account, it does not need to be included in a specific Windows universe. Type N and press ENTER

The benchmark account is now successfully set up. The final step is to load or “refresh” the data.

8.3 Refreshing the data for a FTID benchmark with POSTPMSECT

In order to refresh the benchmark, there needs to be an inception value posted to the benchmark performance file from which to begin calculating the subsequent values / percent changes. This is done using POSTPMSECT.

1. At the WHAT NEXT? prompt, type POSTPMSECT and press ENTER. The editor will appear:

```
WHICH FUNCTION: ? POSTPMSECT

POSTPMSECT
```

```
AVAILABLE SECTORS: P01 P02 P03 P04 P05 P06 P07 P08 P09 P10 P11 P12 P13 P14 P15
P TRDTYS: V C I A Z
(1) HISTORICAL PERFORMANCE
(2) DTCNO
(3) SNAM/BWNUMSECT  TYPE   DATEAMOUNTTOTAL/LOCKED
(3)   ----------   ----- ----- -----    --------------------
(4)
```

2. Type the data, separated by a single space, and press ENTER. The system aligns the data in the columns. Use the following values:

Field	Description
SNAM/BWNUM	Short name for the benchmark account
SECT	M for the Manual sector
TYPE	V for TYPE of value
DATE	Month-end date prior to the date to start refreshing. For example, if data for benchmark begins 11/30, DATE should be 10/ 31
AMOUNT	Value of benchmark for date entered in DATE column. If the actual value is not known, use 1000.00
TOTAL/LOCKED	TOTAL for the type of value

3. After entering the appropriate values, type (Q and press ENTER to save the data. Then, type (Q and press ENTER to exit the function. The values will be posted to the manual sector of the performance file for the benchmark

   After the benchmark account has been set up and the initial value posted, the final step is to find the link the account to the security.

4. At the WHAT NEXT? prompt, type EDITMULLERBENCH and press ENTER. The following screen will appear:

```
08/26/02  3:35 P.M.    Auto-Benchmark Update Edit Screen    F-3 To Quit
--------------------------------    F-10 to Save
Cusip in
EDFEND          Snam
------          ----
```

```
00000A305      MLHM
03113H100      MID
616905105      CMR
00000F197      RMS
00000F262      XAX
000005488      BARAI
000005496      BARBI
000005645      BARCI
00000A107      BARF
000003707      CDRA
000003723      CDRB
000003848      CDRC
000003731      CDRD
000003749      CPRA
000003756      CPRB
--------------------------------------------------------------------------------
-
F-6 To Insert; Shift F-6 To Delete
```

Field	Description
CUSIP in EDFEND	The CUSIP associated with the FTID benchmark
SNAM	The SNAM of the account in which the benchmark is to be tracked

5. Using the TAB key, highlight the data you want to change, and type the new data. If you want to add an additional CUSIP/SNAM association, press the F6 key, and type the information in the appropriate columns on the blank line
6. To exit and save, press F10. The following screen will appear:

```
+-------------------------------------------+
|Are You Sure You Want to Save These Changes ?|
|-------------------------------------------|
|NO|
|YES|
```

```
+-----------------------------------------+
```

7. To save the changes, select YES and press ENTER.

> **Note:** These changes take effect overnight during nightly processing.

8.4 List of available FT Interactive Data benchmarks

The following is a list of FT Interactive Data (formerly Muller) benchmarks that were available as of November 1, 2002.

> **Note:** Contact your account manager to confirm availability.

FT Interactive Data Benchmarks			Data start date	
SNAM	**CUSIP**	**Description**	**Monthly**	**Daily**
ADR	03112Q101	Amex Intl Mkt ADR Index	05/31/97	05/26/98
BARAI	000005488	Bankers Acceptance 30 Day Rate	12/31/96	11/03/97
BARBI	000005496	Bankers Acceptance 60 Dat Rate	12/31/96	11/03/97
BARCI	000005645	Bankers Acceptance 90 Day Rate	12/31/96	11/03/97
BARF	00000A107	Bankers Acceptance 180 Day Rate	12/31/96	11/03/97
CDRA	000003707	Certificate of Deposit 30 Day Rate	12/31/96	11/03/97
CDRB	000003715	Certificate of Deposit 60 Day Rate	12/31/96	11/03/97
CDRC	000003723	Certificate of Deposit 90 Day Rate	12/31/96	11/03/97
CDRD	000003848	Certificate of Deposit 180 Day Rate	12/31/96	11/03/97
CPRA	000003731	Commercial Paper 30 Day Rate	12/31/96	11/03/97
CPRB	000003749	Commercial Paper 60 Day Rate	12/31/96	11/03/97
CPRC	000003756	Commercial Paper 90 Day Rate	12/31/96	11/03/97

FT Interactive Data Benchmarks			Data start date	
SNAM	**CUSIP**	**Description**	**Monthly**	**Daily**
CPRE	000003814	Commercial Paper 180 Day	12/31/96	11/03/97
DJERA	Z2091B103	Dow Jones Equity REIT Price Index	04/30/99	05/03/99
DJERTA	Z2091B137	Dow Jones Equity REIT Total Index	04/30/99	05/03/99
DJIL	000001453	Dow Jones Bond Average 10 Industrials	05/31/97	05/26/98
DJR	12490U105	Dow Jones Equity REIT Index	04/30/99	05/03/99
DJUSA	Z20601268	Dow Jones US Index	04/30/99	05/03/99
DJW	00000A255	Dow Jones World Stock Index	12/31/99	11/03/99
DJXUS	00000F122	Dow Jones World Ex US Stock Index	12/31/96	11/03/97
DJ30	000001107	Dow Jones 30 Industrials	12/31/96	11/03/97
DJ65	000001131	Dow Jones 65 Stock Composite	05/31/97	05/26/98
DXYZ	000003855	US Dollar	12/31/96	11/03/97
EAFE	00000A487	Morgan Stanley EAFE	12/31/96	11/03/97
EMBI	00000A248	JP Morgan Brady Bond Index (Emerging Markets)	12/31/96	11/03/97
EUROP	00000A495	Morgan Stanley Europe	12/31/96	11/03/97
FINL	000001339	NASDAQ Financial	08/31/98	09/28/98
FNMACI	000005421	FNMA Mortgage 30 Yr Index	05/31/97	05/26/98
FNMASI	000002295	FNMA Mortgage Fixed Rate Index	05/31/97	05/26/98
GSCO	00000A545	Goldman Sachs Commodity Index - Tr	12/31/96	11/03/97
INDS	000001313	NASDAQ Industrials	12/31/96	11/03/97
IXA	000006502	NASDAQ ADR Index	04/30/99	05/03/99

FT Interactive Data Benchmarks			Data start date	
SNAM	**CUSIP**	**Description**	**Monthly**	**Daily**
IXF	000006585	NASDAQ Financial Index	04/30/99	05/03/99
MRLAB	00000B535	Merrill Lynch Asset Back Master - Tr	12/31/96	11/03/97
MRLCG	000004614	Merrill Lynch Corp & Govt Master - Tr	12/31/96	11/03/97
MRLCM	00000A594	Merrill Lynch Corp Master - Tr	12/31/96	11/03/97
MRLCO	00000A602	Merrill Lynch Corp 1-10 Yr - Tr	12/31/96	11/03/97
MRLCP	00000A610	Merrill Lynch Corp 10+ Yr - Tr	12/31/96	11/03/97
MRLDM	000004606	Merrill Lynch Domestic Master - Tr	12/31/96	11/03/97
MRLGB	000004663	Merrill Lynch Global Bond - Tr	12/31/96	11/03/97
MRLGG	000004655	Merrill Lynch Global Govt Bond - Tr	12/31/96	11/03/97
MRLHY	00000A305	Merrill Lynch High Yld Master - Tr	12/31/96	11/03/97
MRLMM	000004671	Merrill Lynch Mortgage Master - Tr	12/31/96	11/03/97
MRLRE	00000A651	Merrill Lynch Tx Ex 22+ Yr Rev - Tr	12/31/96	11/03/97
MRLTA	00000A644	Merrill Lynch Tx Ex 12-22 G.o. - Tr	12/31/96	11/03/97
MRLTB	00000A321	Merrill Lynch Treasury Bill - Tr	12/31/96	11/03/97
MRLTE	00000A636	Merrill Lynch Tx Ex 7-12 Yr G.o. - Tr	12/31/96	11/03/97
MRLTM	00000A313	Merrill Lynch Treasury Master - Tr	12/31/96	11/03/97
MRLUG	000004630	Merrill Lynch Non US $ Govt - Tr	12/31/96	11/03/97
MRLUS	000004622	Merrill Lynch Non US $ Bond - Tr	12/31/96	11/03/97
MRLYM	00000A628	Merrill Lynch Yankee Master - Tr	12/31/96	11/03/97
MSELA	00000D234	Morgan Stanley Emg Latin Amer	12/31/96	11/03/97
MSEMF	00000D242	Morgan Stanley Emg Mkts Free	12/31/96	11/03/97

FT Interactive Data Benchmarks			Data start date	
SNAM	**CUSIP**	**Description**	**Monthly**	**Daily**
MSEMG	00000F106	Morgan Stanley Emg Mkts Glbl	12/31/96	11/03/97
MSJPL	00000A529	Morgan Stanley Japan	12/31/96	11/03/97
MSUSD	00000A503	Morgan Stanley USA	12/31/96	11/03/97
NCMP	000004184	NASDAQ National Market Comp Index	12/31/96	11/03/97
NIND	000004176	NASDAQ National Market Ind Index	12/31/96	11/03/97
NNA	628932105	NYSE Utility Index	12/31/96	11/03/97
NYA	629489105	New York Stock Exchange Composite	12/31/96	11/03/97
OEX	783790108	S&P 100	12/31/96	11/03/97
RUAZ	000003889	Russell 3000 Index	12/31/96	11/03/97
RUGI	00000E422	Russell 2000 Growth	12/31/96	01/03/00
RUIZ	000003897	Russell 1000 Index	12/31/96	11/03/97
RUSI	00000F940	Russell 2500 Index	03/31/98	05/26/98
RUSM	00000C749	Russell Midcap	12/31/96	11/03/97
RUSS	00000A925	Russell 1000 Growth	12/31/96	11/03/97
RUSV	00000F957	Russell 2500 Growth Index	03/31/98	05/26/98
RUTZ	124835109	Russell 2000 Index	12/31/96	11/03/97
RUVA	00000C756	Russell 1000 Value	12/31/96	11/03/97
RUVI	00000E430	Russell 2000 Value	12/31/98	01/03/00
RUVL	00000F965	Russell 2500 Value	03/31/98	05/26/98
SGX	783962103	S&P Barra Growth	12/31/96	11/03/97
SML6	12483W100	S&P Small Cap 600	12/31/96	11/03/97

FT Interactive Data Benchmarks			Data start date	
SNAM	**CUSIP**	**Description**	**Monthly**	**Daily**
SPSC	00000C814	S&P 1500 Super Composite	12/31/96	11/03/97
SPX	648815108	New S&P 500 Index	12/31/96	11/03/97
SVX	783963101	S&P Barra Value	12/31/96	11/03/97
USTBA	000001958	US Treasury Bill Yields - 91 Day Bills	12/31/96	11/03/97
USTBB	000001966	US Treasury Bill Yields - 182 Day Bills	12/31/96	11/03/97
USTBD	000001974	US Treasury Bd Yields - 30yr Bonds	12/31/96	11/03/97
USTBE	000001156	US Treasury Bd Yields - 10yr Bonds	12/31/96	11/03/97
USTBF	000002261	US Treasury Nt Yields - 5yr Notes	12/31/96	11/03/97
USTBG	00000A172	US Treasury Nt Yields - 3yr Notes	12/31/96	11/03/97
USTBH	00000A180	US Treasury Nt Yields - 2yr Notes	12/31/96	11/03/97
USTBN	00000A164	US Treasury Nt Yields - 7yr Notes	12/31/96	11/03/97
VLAZ	920403102	Value Line Comp Index - Arithmetic Wght	12/31/96	11/03/97
VLIC	920402014	Value Line Composite (MDC)	12/31/96	11/03/97
VLII	000001180	Value Line Industrials	05/31/97	05/26/98
VLIU	000001206	Value Line Utilities	04/30/99	05/03/99
WLSH	000001149	Wilshire 5000	12/31/96	11/03/97
WORLD	00000A511	Morgan Stanley World	12/31/96	11/03/97
WSX	693617102	Wilshire Small Cap 250 Stocks	12/31/96	11/03/97

Chapter 9: Russell Benchmarks

This chapter describes how to set up a benchmark account with benchmarks maintained by Frank Russell Company (Russell), a subsidiary of Northwestern Mutual. This section also contains a list of available Russell benchmarks.

9.1 Setting up a Russell benchmark

The benchmark account is set up in the same manner as an active account. The differences are no portfolio data (EDPORT), no general ledger data (EDGL) and performance data only in the Manual sector (PM).

Although EDITAC can be used, NEWACCT is recommended because it allows for the set up of multiple benchmarks.

9.2 Using NEWACCT to set up a Russell benchmark account

Use the following steps:

1. At the APL Expert WHAT NEXT? prompt, type NEWACCT and press ENTER. The NEWACCT editor will appear:

```
WHAT NEXT? NEWACCT

NEWACCT

TYPE *HELP FOR FOLLOWING MESSAGE:

ENTER INFO INDICATED FOR EACH NEW ACCOUNT TO ADD

SELL CODE: 1=LIFO, 2=FIFO, 3=MINTAX, 4=HIGH COST, 5=AVG COST, 6=LOW COST SHORT
NAMES WILL BE CHECKED FOR UNIQUENESS AFTER CLOSE OUT

(0)    SNAM    ACNUMRR   SELL TITLE

(1)    ----    ------- ---- -----

(2)
```

2. Data for each benchmark is entered on a single line, separated by a single space. The system automatically aligns the columns. Use the following values:

Field	Description
SNAM	The pre-assigned short name for the Russell benchmark

Field	Description
ACNUM	0 for the account number
RR	100 for the registered representative
SELL	0 for the sell code
TITLE	Name of the benchmark. Name can be no longer than 40 characters, including spaces. This should be kept in mind as the name of the benchmark can be truncated on reports that do not allow enough space for the entire benchmark name

3. Type (Q and press ENTER to save data
4. Type (Q and press ENTER to exit editor. The system will automatically run the POSTGL function. Since this is a benchmark account, there is no data required and the function can be exited
5. Type (Q and press ENTER to save the OPE entry posted for the account
6. Type (Q and press ENTER to exit the editor. The following prompt will appear:

```
DO YOU WANT TO POST THESE ENTRIES NOW?
```

> **Note:** The OPE line does not have the same meaning as with active accounts. Therefore, it is optional whether or not the entry is posted.

7. Choose one of the following options
   - To not post entries, type N and press ENTER. If you choose not to post the entry, a file is created with the entry and is stored under the name POSTGL.P#, where # is the populated based on the number of times POSTGL is run during an APL session. For example, an active account is set up but the OPE entry is not posted. If this is the first time POSTGL is being running during the current APL Session, the file will be named POSTGL.P01. The next time POSTGL is run, during the same APL session, the file will be named POSTGL.P02
   - To post the entries, type Y and press ENTER

> **Note:** The following steps only apply if the client is a user of INFODEX.

8. **If the client is set up to use INFODEX**, the system will go to the INFODEX Account Master Screen. Since this is a benchmark, it does not have to be set up in INFODEX. Press F3 to exit the INFODEX Account Master screen; then select No to not save changes.
9. The following prompt will appear:

```
DO YOU WANT TO RUN UPDATENEW NOW?
```

10. UPDATENEW updates Windows to include the account for use in reporting and/or trading. Since this is benchmark account, it does not need to be included in a specific Windows universe. Type N and press ENTER

The benchmark account is now successfully set up. The next step is to map the benchmark account to the benchmark identifier, or short description, for updating.

Mapping Russell benchmarks to accounts using EDINDEX

The function that enables you to view, edit, add to, or delete a Russell benchmark mapping is EDINDEX. To use this function, follow these steps:

1. At the WHAT NEXT? prompt, type EDINDEX and press ENTER. A screen will appear, listing the available indices

```
SAMPLE ASSET MANAGEMENT           F-3 to Quit
F-10 to Save


APL/Frank Russell Company Mapping
---------------------------
SNAM Index Name
---- ----------
AMEXCP AMEX COMPOSITE
BANKAC BANKERS ACCEPT
COMP30 COMM PAPER 30D
COMPAP COMMER PAPER
DOMINI DOMINI SOCIAL
DOW DJ IND (FRC)
FBCB 1ST BOS CNV BD
FBCS 1ST BOS CNV SEC
FBH CSFB GL HY
FBHLT CSFB GL HY LOW
FBHUMN CSFB GL HY UMNR
FBHUT CSFB GL HY UP
FBMIDT CSFB GL HY MID
FROLEY FROLEY REVY 30
GS100C GS 100 CNV
GSCI GS CMDTY (GSCI)
```

```
HAMG HAMBRECHT GROW

Leave SNAM Blank If You Do Not Wish to Update an Index
```

2. Using the TAB or arrow keys to move around the screen, type the SNAM of the benchmark next to the description of the index
3. Press F10 and answer YES to save the mapping. The final step is to update the benchmark

9.3 Updating a Russell benchmark using UPDATEINDEX

To refresh the benchmarks mapped in EDINDEX, the function UPDATENIDEX. Use the following steps:

1. At the APL menu, type UPDATEINDEX. The following prompt will appear:

```
+-------------------------------------------------------------------------
+
|Refresh Starting From Which Month-End Date?
+-------------------------------------------------------------------------
+
```

Note: The data that is used for updating the returns begins 04/30/95. If you need returns prior to this date, request this using the IS Service Center system. Your message should indicate which benchmarks should be updated, and from what date.

2. Enter the month-end date in YYYYMMDD format, and press ENTER. The following will appear:

```
+-----------------------------------------------------------+
|A Total of 304 Mapping(s) from APL to Frank Russell Company|
|Has Been Found|
|   Do You Want to Update All Indices in this Mapping?|
|-----------------------------------------------------------|
|NO|
|YES|
+-----------------------------------------------------------+
```

3. To update all indices mapped in EDINDEX, select YES and press ENTER. To select the benchmarks to be updated, select NO and press ENTER

a. If YES is selected, the following will appear:

```
+----------------------------------------+
|Do You Want to Update Additional Indices ?|
|----------------------------------------|
|NO|
|YES|
+----------------------------------------+
```

Select NO and press ENTER. All benchmarks mapped in EDINDEX will be updated. Messages are displayed showing the progress of the process. Then the system displays the WHAT NEXT? prompt when the function is completed.

b. If NO is selected, the following will appear:

```
+----------------------------------------+
|Updates Are Available Until July 31, 2002.|
| Which Indices Would You Like to Update? |
|----------------------------------------|
| AMEX COMPOSITE
| BANKERS ACCEPT
| BGI US EQ MKT
| COMM PAPER 30D
| COMMER PAPER
| CSFB GL HY
| CSFB GL HY LOW
| CSFB GL HY MID
| CSFB GL HY UP
| CSFB HY DEV
| DJ IND (FRC)
| DOMINI SOCIAL
| DOW JONES IND P
+---------------+----------------------------------------+---------------+
|Esc-Exit  F1-Help   F4-Search   SF5-Select ALL  SF6-Clear ALL|
|F7-Refresh Search   F8-Options  F10-Go   Return-Select/Un-Select|
```

```
+-------------------------------------------------------------------------------+
```

- Use the search option or arrow keys to locate the benchmarks you want to update, and press ENTER to select them. An asterisk (*) indicates which benchmark is selected
- After selecting the indices you want to update, press F10 to save selection and move to the next screen

```
SAMPLE ASSET MANAGEMENT

File As Of: July 31, 2002

Frank Russell Indices Screen

---------------------------

SNAM   Index Name

----   ----------

AMEX COMPOSITE

DOW JONES IND P

Leave SNAM Blank If You Do Not Wish to Update an Index
```

- Type the short names next to the descriptions
- Press the F10 key to save the changes, and begin refreshing from the selected month-end date

> **Note:** If a benchmark return is not available for the current month-end date, a message will appear, indicating it should be available on the next file.

9.4 List of available Russell benchmarks

The following is a list of Russell benchmarks that were available as of November 1, 2002. Contact your account manager to confirm availability.

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
AMEXCP	AMEX COMPOSITE	AMEX Composite Price Index	12/31/95	
BANKAC	BANKERS ACCEPT	Bankers Acceptances	03/31/78	
BGIUEM	BGI US EQ MKT	BGI US Equity Market	01/31/01	
COMPA P	COMMER PAPER	Commercial Paper	03/31/78	
COMP30	COMM PAPER 30D	Commercial Paper 30 Day	12/31/89	
DOMINI	DOMINI SOCIAL	Domini Social Index	04/30/90	
DOW	DJ IND (FRC)	Dow Jones Industrial Average (FRC Calc)	12/31/74	
DOWP	DOW JONES IND P	Dow Jones Industrial Average Price Return	01/31/69	
FBCB	1ST BOS CNV BD	First Boston Convertible Bond Index	12/31/81	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
FBCS	1ST BOS CNV SEC	First Boston Convertible Securities Index	12/31/81	
FBH	CSFB GL HY	CS First Boston Global High Yield Index	12/31/85	
FBHLT	CSFB GL HY LOW	CS First Boston Global High Yield Lower Tier	12/31/85	
FBHUT	CSFB GL HY UP	CS First Boston Global High Yield Upper Tier	12/31/85	
FBMIDT	CSFB GL HY MID	CS First Boston Global High Yield Middle Tier	12/31/85	
FROLEY	FROLEY REVY 30	Froley, Revy 30 Convertible Bond Index	12/31/85	
GSCI	GS CMDTY (GSCI)	Goldman Sachs Commodity Index (GSCI)	12/31/69	
GS100C	GS 100 CNV	Goldman Sachs 100 Convertible Index	12/31/84	
HAMG	HAMBRECHT GROW	Hambrecht & Quist Growth Stock Index	01/31/70	
HAMT	HAMBRECHT TECH	Hambrecht & Quist Technology Stock Index	01/31/70	
HHGOL D	H H GOLD	Handy Harmond Gold Base Price Quote	02/28/70	
COMP30	COMM PAPER 30D	Commercial Paper 30 Day	12/31/89	
DOMINI	DOMINI SOCIAL	Domini Social Index	04/30/90	
DOW	DJ IND (FRC)	Dow Jones Industrial Average (FRC Calc)	12/31/74	
DOWP	DOW JONES IND P	Dow Jones Industrial Average Price Return	01/31/69	
FBCB	1ST BOS CNV BD	First Boston Convertible Bond Index	12/31/81	
FBCS	1ST BOS CNV SEC	First Boston Convertible Securities Index	12/31/81	
FBH	CSFB GL HY	CS First Boston Global High Yield Index	12/31/85	
FBHLT	CSFB GL HY LOW	CS First Boston Global High Yield Lower Tier	12/31/85	
FBHUT	CSFB GL HY UP	CS First Boston Global High Yield Upper Tier	12/31/85	
FBMIDT	CSFB GL HY MID	CS First Boston Global High Yield Middle Tier	12/31/85	
FROLEY	FROLEY REVY 30	Froley, Revy 30 Convertible Bond Index	12/31/83	
GSCI	GS CMDTY (GSCI)	Goldman Sachs Commodity Index (GSCI)	12/31/69	
GS100C	GS 100 CNV	Goldman Sachs 100 Convertible Index	12/31/84	
HAMG	HAMBRECHT GROW	Hambrecht & Quist Growth Stock Index	01/31/70	
HAMT	HAMBRECHT TECH	Hambrecht & Quist Technology Stock Index	01/31/70	
HHGOL D	H H GOLD	Handy Harmond Gold Base Price Quote	02/28/70	
IIC	S&P / IFCI COMP	S&P/IFC Investable Composite Index	12/31/88	
JPME	JPM EMBI	JP Morgan Emerging Markets Bond Index	11/30/90	
JPMGG	JPM GLOB GOV	JP Morgan Global Government Bond	12/31/75	
KBMSI	KLD BMSI	KLD Broad Market Social Index	06/30/00	
KLCSI	KLD LCSI	KLD Large Capitalization Social Index	06/30/00	
LBAAI	LB CRP BAA INT	Lehman Brothers Corporate BAA Intermediate	12/31/72	
LBAAL	LB CRP BAA LG	Lehman Brothers Corporate BAA Long	12/31/72	
LBAGG	LB AGGREGATE	Lehman Brothers Aggregate Bond	12/31/75	
LBAGY	LB AGENCY	Lehman Brothers Agency	12/31/75	
LBAGYI	LB AGENCY INT	Lehman Brothers Agency-Intermediate	12/31/75	
LBAGYL	LB AGENCY LT	Lehman Brothers Agency-Long Term	12/31/75	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
LBASSB	LB ASSET-B	Lehman Brothers Asset-Backed Securities Index	01/31/92	
LBCA	LB CRP A	Lehman Brothers Corporate A	12/31/72	
LBCAA	LB CRP AA	Lehman Brothers Corporate AA	12/31/72	
LBCAAA	LB CRP AAA	Lehman Brothers Corporate AAA	12/31/72	
LBCAB1	LB CA BOND 1	Lehman Brothers California Bond 1 Year	06/30/93	
LBCAB3	LB CA BOND 3	Lehman Brothers California Bond 3 Year	06/30/93	
LBCAB5	LB CA BOND 5	Lehman Brothers California Bond 5 Year	06/30/93	
LBCAI	LB CRP A INT	Lehman Brothers Corporate A Intermediate	12/31/72	
LBCAL	LB CRP A LG	Lehman Brothers Corporate A Long	12/31/72	
LBCBAA	LB CRP BAA	Lehman Brothers Corporate BAA	12/31/72	
LBCBB	LB CRP BB	Lehman Brothers Corporate BB	06/30/83	
LBCBBI	LB CRP BB INT	Lehman Brothers Corporate BB Intermediate	06/30/83	
LBCBBL	LB CRP BB LG	Lehman Brothers Corporate BB Long	06/30/83	
LBCBI	LB CRP B INT	Lehman Brothers Corporate B Intermediate	06/30/83	
LBCBL	LB CRP B LG	Lehman Brothers Corporate B Long	06/30/83	
LBCCCC	LB CRP CCC	Lehman Brothers Corporate CCC	06/30/83	
LBCCCD	LB CRP CCD	Lehman Brothers Corporate CC to D	12/31/92	
LBCCCI	LB CRP CCC INT	Lehman Brothers Corporate CCC Intermediate	06/30/83	
LBCCCL	LB CRP CCC LG	Lehman Brothers Corporate CCC Long	06/30/83	
LBCCDI	LB CRP CCD INT	Lehman Brothers Corporate CC to D Intermediate	12/31/92	
LBCCDL	LB CRP CCD LG	Lehman Brothers Corporate CC to D Long	12/31/92	
LBCINT	LB CREDIT INT	Lehman Brothers U.S. Credit Intermediate	12/31/72	
LBCLT	LB CREDIT LT	Lehman Brothers U.S. Credit Long Term	12/31/72	
LBCNR	LB CRP N-R	Lehman Brothers Corporate Non Rated	12/31/92	
LBCRP	LB US CREDIT	Lehman Brothers U.S. Credit	12/31/72	
LBEG	LB E GLOBAL	Lehman Brothers Eurobond Global Issues Index	09/30/89	
LBGC	LB G/C	Lehman Brothers Government/Corpoarte Index	12/31/72	
LBGCA	LB G/C A+	Lehman Brothers Gov/Corp A+ Index	12/31/72	
LBGCHL	LB G/C HQ LT	Lehman Brothers G/C High Quality-Long Term	12/31/74	
LBGCI	LB G/C INT	Lehman Brothers Gov/Corp-Intermediate	12/31/72	
LBGCIM	LB G/C INT MORT	Lehman Brothers Inter Gov/Corp Mortgage Index	12/31/75	
LBGCL	LB G/C LT	Lehman Brothers Gov/Corp-Long Term	12/31/72	
LBGC13	LB G/C 1-3	Lehman Brothers Government/Corporate 1-3	12/31/72	
LBGINT	LB GOV INT	Lehman Brothers Government-Intermediate	12/31/72	
LBGLBL	LB GLBL	Lehman Brothers Global Bond Index	01/31/87	
LBGLT	LB GOV LT	Lehman Brothers Government-Long Term	12/31/72	
LBGMMF	LB GOV/MTG MF	Lehman Brothers Government Mortgage Mutual Fund	01/31/76	
LBGNMM	LB GNMA MON	Lehman Brothers GNMA Monthly Index	12/31/75	

Frank Russell Benchmarks			Data Start Date	
SNAM	Short Description	Description	Monthly	Daily
LBGOI	LB G.O. INDEX	Lehman Brothers Government Obligation Index	12/31/94	
LBGOV	LB GOV	Lehman Brothers Government Bond	12/31/72	
LBGO01	LB G.O. 1YR	Lehman Brothers Government Obligation - 1 Yr	06/30/93	
LBGO03	LB G.O. 3YR	Lehman Brothers Government Obligation - 3 Yr	12/31/84	
LBGO05	LB G.O. 5YR	Lehman Brothers Government Obligation - 5 Yr	12/31/79	
LBGO07	LB G.O. 7YR	Lehman Brothers Government Obligation - 7 Yr	12/31/84	
LBGO10	LB G.O. 10YR	Lehman Brothers Government Obligation - 10 Yr	12/31/79	
LBGO20	LB G.O. 20YR	Lehman Brothers Government Obligation - 20 Yr	12/31/83	
LBG13	LB GOV 1-3YR	Lehman Brothers Government 1-3 Yr	12/31/75	
LBHBC	LB HY B CRP	Lehman Brothers High Yield B Corporate Index	06/30/83	
LBHIGH	LB HIGH YIELD	Lehman Brothers High Yield Index	06/30/83	
LBIAGG	LB INT AGG	Lehman Brothers Intermediate Aggregate Bond Index	12/31/75	
LBIHY	LB INT HY	Lehman Brothers Intermediate High Yield	06/30/83	
LBINS	LB INSURED	Lehman Brothers Insured Index	12/31/94	
LBLHY	LB LONG HY	Lehman Brothers Long Term High Yield	06/30/83	
LBLOGO	LB LOCAL G.O.	Lehman Brothers Local Government Obligation	12/31/89	
LBMORT	LB MORTGAGES	Lehman Brothers Mortgage-Backed Securities	12/31/75	
LBMUNI	LB MUNI	Lehman Brothers Municipal Bond Index	12/31/79	
LBMUNL	LB MUNI LT	Lehman Brothers Municipal-Long Term	12/31/79	
LBM01	LB MUNI 1 YR	Lehman Brothers Municipal-1Yr	12/31/ 93	
LBM03	LB MUNI 3YR	Lehman Brothers Municipal-3Yr	12/31/ 89	
LBM05	LB MUNI 5YR	Lehman Brothers Municipal-5yr	12/31/ 87	
LBM07	LB MUNI 7YR	Lehman Brothers Municipal-7yr	12/31/ 89	
LBM1I	LB MUNI 1YR INC	Lehman Brothers Municipal-1 Yr Income	06/30/93	
LBM1P	LB MUNI 1YR P	Lehman Brothers Municipal-1Yr Price	06/30/93	
LBM10	LB MUNI 10YR	Lehman Brothers Municipal-10 Yr	12/31/ 79	
LBM15Y	LB MUNI 15YR	Lehman Brothers Municipal-15 Yr	12/31/ 89	
LBM20	LB MUNI 20YR	Lehman Brothers Municipal-20 Yr	12/31/ 79	
LBNIG	LB N/INV GRADE	Lehman Brothers Non Investment Grade	09/30/95	
LBPREF	LB PREREFUNDED	Lehman Brothers Prerefunded Index	12/31/ 94	
LBREV	LB REVENUE	Lehman Brothers Revenue Bond Index	12/31/79	
LBSGO	LB STATE G.O	Lehman Brothers State Government Obligation Bond	12/31/79	
LBTINT	LB TRS INT	Lehman Brothers Treasury-Intermediate	12/31/72	
LBTLT	LB TRS LT	Lehman Brothers Treasury-Long Term	12/31/72	
LBTRS	LB TRS	Lehman Brothers Treasury Bond	12/31/72	
LBT20	LB TRS 20+YR	Lehman Brothers Treasury-20+ Yr	12/31/72	
LBUSTI	LB U.S. TIPS	Lehman Brothers Treasury Inflation Protected Sec	10/31/97	
LBUSTR	LB US TRS 1-3YR	Lehman Brothers US Government Treasury 1-3 Year Index	01/31/76	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
LBUSUN	LB US UNIVERSAL	Lehman Brothers U.S. Universal Index	01/31/90	
LBUS13	LB US CR 1-3MF	Lehman Brothers U.S. Credit 1-3 Mutual Fund	03/31/00	
LBUS15	LB US CR 1-5MF	Lehman Brothers U.S. Credit 1-5 Mutual Fund	03/31/00	
LB10YB	LB 10Y BELL	Lehman Brothers 10 Year Bellwethers	01/31/81	
LB2YB	LB 2Y BELL	Lehman Brothers 2 Year Bellwethers	12/31/80	
LB2YBC	LB 2Y BELL CP	Lehman Brothers 2 Year Bellwethers Coupon	12/31/80	
LB2YBP	LB 2Y BELL PR	Lehman Brothers 2 Year Bellwethers Price	12/31/80	
LB30BC	LB 30Y BELL CP	Lehman Brothers 30 Year Bellwethers Coupon	12/31/80	
LB30BP	LB 30Y BELL PR	Lehman Brothers 30 Year Bellwethers Price	12/31/80	
LB30YB	LB 30Y BELL	Lehman Brothers 30 Year Bellwethers	12/31/80	
LB5BC	LB 5Y BELL CP	Lehman Brothers 5 Year Bellwethers Coupon	12/31/80	
LB5BP	LB 5Y BELL PR	Lehman Brothers 5 Year Bellwethers Price	12/31/80	
LB5YB	LB 5Y BELL	Lehman Brothers 5 Year Bellwethers	12/31/80	
LB710T	LB 7-10YR TREAS	Lehman Brothers 7-10 Treasury Index	08/31/88	
LCAAAI	LB CRP AAA INT	Lehman Brothers Corporate AAA Intermediate	12/31/72	
LCAAAL	LB CRP AAA LG	Lehman Brothers Corporate AAA Long	12/31/72	
LCAAI	LB CRP AA INT	Lehman Brothers Corporate AA Intermediate	12/31/72	
LCAAL	LB CRP AA LG	Lehman Brothers Corporate AA Long	12/31/72	
LGAXU	LB GBL AGG X US	Lehman Brothers Global Aggregate X US (unhedged)	01/31/90	
LGMF15	LB G/C 1-5 MF	Lehman Brothers Government/Corporate 1-5 Mutual Fund	12/31/85	
LIBID3	LIBID 30 DAY	LIBID - BBA London Index 30 Day (Bid)	06/30/89	
LIBID9	LIBID 90 DAY	LIBID - BBA London Index 90 Day (Bid)	06/30/88	
LIB180	LIBOR 180 DAY	LIBOR - BBA London Index 180 Day	01/31/82	
LIB30	LIBOR 30 DAY	LIBOR - BBA London Index 30 Day	12/31/83	
LIB90	LIBOR 90 DAY	LIBOR - BBA London Index 90 Day	01/31/82	
LUMF15	LB US GOV 1-5M	FLehman Brothers U.S. Government 1-5 Mutual Fund	11/30/85	
LUT15M	LB US TRS 1-5M	FLehman Brothers U.S. Treasury 1-5 Mutual Fund	01/31/76	
MCHQ15	ML CRP HQ 15+	Merrill Lynch Corporate High Quality	12/31/75	
MLACNV	ML ALL CONV	Merrill Lynch All Convertibles Index	12/31/87	
MLADRC	ML ADR CONV	Merrill Lynch ADR Composite Index	12/31/92	
MLBU51	ML BBBA UP 5-10	Merrill Lynch US Corp BBB A Rate Utilities & Phone 5-10	03/31/73	
MLCBB	ML C BBBA BNK	Merrill Lynch Corporate BBB A Rated Banks 5-10 Yr	01/31/78	
MLCBI	ML CP BBBA IND	Merrill Lynch Corp BBB A Rate Industrials 5-10 Yr	03/31/73	
MLCHB	ML CRP HY B	Merrill Lynch Corporate High Yield B	08/31/88	
MLCHBB	ML HY CRP BB	Merrill Lynch Corporate High Yield BB	08/31/88	
MLCMM	ML CRP MSTR MON	Merrill Lynch Corporate Master Mon Index	11/30/75	
MLCS	ML CON SEC INV	Merrill Lynch Convertible Securities Inc Grade V	12/31/94	
MLC12	ML CRP 1-2.99	Merrill Lynch Corporate - Short Term: 1-2.99 Yr	12/31/77	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
MLC15	ML CRP 15+	Merrill Lynch Corporate - Long Term: 15+ Yr	12/31/77	
MLC19	ML CRP 1-9.99	Merrill Lynch Corporate - Intermediate 1-9.99	01/31/83	
MLC34	ML CRP 3-4.99	Merrill Lynch Corporate - Short Term: 3-4.99 Yr	12/31/77	
MLC510	ML CRP 5-10 YR	Merrill Lynch Corporate US Corporate 5-10 Yr		
MLC59	ML CRP 5-9.99	Merrill Lynch Corporate 5-9.99 Yr	01/31/83	
MLDOMM	ML DOM MSTR	Merrill Lynch Domestic Master Bond	12/31/75	
MLD13	ML DOM MSTR 1-3	Merrill Lynch Domestic Master 1-3 Yrs	11/30/95	
MLEURO	ML EURO$ 1-2.99	Merrill Lynch Eurodollar 1-2.99 Yr	12/31/82	
MLGA12	ML G AG 1-2.99	Merrill Lynch Government Agency 1-2.99	05/31/77	
MLGA34	ML G AG 3-4.99	Merrill Lynch Government Agency 3-4.99	06/30/77	
MLGCM	ML G/C MSTR	Merrill Lynch Govt/Corp Master Bond Index	12/31/75	
MLGC15	ML G/C 1-5	Merrill Lynch Govt/Corp 1-5 Yr Index	12/31/77	
MLGC19	ML G/C 1-9.99	Merrill Lynch Govt/Corp 1-9.99 Index	03/31/87	
MLGOVM	ML GOV MSTR	Merrill Lynch Government Master Index	12/31/75	
MLG14	ML GOV 1-4.99	Merrill Lynch Government Intermediate 1-4.99	01/31/79	
MLG35	ML GOV INT 3-5	Merrill Lynch Government Intermediate 3-5 Year	11/30/82	
MLHM	ML HY MSTR	Merrill Lynch High Yield Master Index	10/31/84	
MLHM2	ML HY MSTR II	Merrill Lynch High Yield Master II	08/31/86	
MLMM	ML MRTG MSTR	Merrill Lynch Mortgage Master Index	12/31/75	
MLMUNI	ML MUNICIPAL	Merrill Lynch Municipal	12/31/75	
MLM03I	ML MUNI 0-3 INC	Merrill Lynch Municipal 0-3 Year Income	04/30/93	
MLM03P	ML MUNI 0-3 PR	Merrill Lynch Municipal 0-3 Year Price	02/28/89	
MLM03Y	ML MUNI 0-3 YR	Merrill Lynch Municipal 0-3 Year	03/31/89	
MLM112	ML MUNI 1-12	Merrill Lynch Municipal Intermediate 1-12	12/31/88	
MLM37	ML MUNI 3-7	Merrill Lynch Municipal 3-7 Year	02/28/89	
MLM712	ML MUNI 7-12 YR	Merrill Lynch Municipal 7-12 Year	02/28/89	
MLTA10	ML TRS/AGY 1-10	Merrill Lynch Treasuries/Agencies 1-10 yrs.	03/31/87	
MLTA13	ML TRS/AGY 1-3	Merrill Lynch Treasuries/Agencies 1-3 yrs.	11/30/85	
MLTR23	ML TRS 2.5-3.5	Merrill Lynch US Treasury 2.5-3.5 Yrs	01/31/93	
MLTR91	ML TREAS 91 DAY	Merrill Lynch Treasury 91 Day	12/31/72	
MLT1YB	ML TRS 1YR BILL	Merrill Lynch US Treasury 1 Year Bill	06/30/91	
MLT10	ML TRS 10	Merrill Lynch US Treasury 10 Yr	12/31/87	
MLT10P	ML TRS 10+ YRS	Merrill Lynch US Treasury 10+ Yr	12/31/77	
MLT12	ML TRS 1-2.99	Merrill Lynch US Treasury 1-2.99 Yr	12/31/77	
MLT14	ML TRS 1-4.99	Merrill Lynch Treasury 1-4.99 Yr	01/31/78	
MLT15P	ML TRS 15+	Merrill Lynch US Treasury 15+ Yr	11/30/75	
MLT182	ML TRS 182 DAY	Merrill Lynch Treasury 182 Day	12/31/77	
MLT19	ML TRS 1-9.99	Merrill Lynch US Treasury 1-9.99 Yrs	12/31/77	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
MLT34	ML TRS 3-4.99	Merrill Lynch US Treasury 3-4.99 Yr	12/31/77	
MLT5	ML TRS 5	Merrill Lynch US Treasury 5 Yr	12/31/87	
MLT56	ML TRS 5-6.99	Merrill Lynch US Treasury 5-6.99 Yr	12/31/77	
MLT710	ML TRS 7-10 YR	Merrill Lynch US Treasury 7-10 Year	12/31/75	
MLT91A	ML TREAS 91D A	Merrill Lynch Treasury 91 Day Actual Index	12/31/77	
MLUG13	ML US C/G 1-3	Merrill Lynch U.S. Corporate & Government 1-3 Yrs.	06/30/86	
MLUS13	ML US CRP 1-3	Merrill Lynch US Corporate 1-3 Yrs	01/31/93	
MLUT51	ML US TRSY 5-10	Merrill Lynch US Treasuries 5-10 Yrs.	01/31/92	
ML1ML	ML 1M LIBOR	Merrill Lynch 1 Month LIBOR	01/31/95	
ML1TN	ML 1 YR T-NOTE	Merrill Lynch 1 Year Treasury Note	07/31/00	
ML1014	ML TRS 10-14.99	Merrill Lynch US Treas 10-14.99 Yr	07/31/77	
ML122	ML MUNI 12-22	Merrill Lynch Municipal 12-22 Years	12/31/88	
ML2TN	ML 2 YR T-NOTE	Merrill Lynch 2 Year Treasury Note	12/31/87	
ML3ML	ML 3M LIBOR	Merrill Lynch 3 Month LIBOR	01/31/95	
MSEAFE	MSCI EAFE	MSCI EAFE Index	12/31/69	
MSEXUS	MSCI EX-U.S.	MSCI World EX-USA Index	12/31/69	
MSPACB	MSCI PAC BASIN	MSCI Pacific Index	12/31/69	
MSREIT	MS REIT	MSCI REIT Index	12/31/94	
MSWLD	MSCI WORLD	MSCI World Index	12/31/69	
NAREIT	NAREIT EQUITY	NAREIT Share Price - Equity Index	12/31/71	
NAS100	NASDAQ 100 P	NASDAQ 100 Stock Index Price	02/28/85	
NYSEC	NYSE COMP	NYSE Composite	12/31/74	
NYSECP	NYSE COMP PRICE	NYSE Composite-Price Return	12/31/86	
OTCCP	OTC COM PRICE	NASDAQ OTC Composite-Price Return	12/31/74	
OTCIP	OTC IND PRICE	NASDAQ O-T-C Industrials-Price Return	12/31/74	
PRT1	P&R T-NOTE 1YR	Payden & Rygel Treasury Note-One Year	11/30/68	
PRT2	P&R T-NOTE 2YR	Payden & Rygel Treasury Note-2 Year	11/30/68	
RMGEW	RMIDC GR EQ WTD	Russell Midcap Growth Index:Equal-Weighted	06/30/95	
RMIDCP	RUSSELL MIDCAP	Russell Midcap Index-Total Return	12/31/78	06/01/95
RMIDE	RMIDC EQ WT	Russell Midcap Index: Equal-Weighted	01/31/86	
RMIDG	RUS MIDCAP GR	Russell Midcap Growth Index	12/31/85	06/01/95
RMIDV	RUS MIDCAP VAL	Russell Midcap Value Index	12/31/85	06/01/95
RMVEW	RMIDC VL EQ WTD	Russell Midcap Value Index:Equal-Weighted	06/30/95	
RSCCG	RSSC GROWTH	Russell Small Cap Completeness Growth	01/31/80	
RSCCV	RSSC VALUE	Russell Small Cap Completeness Value	01/31/80	
RT200	RUS TOP 200	Russell Top 200 Index-Total Return	12/31/78	06/01/95
RT200G	RUS TOP 200 GR	Russell Top 200 Growth Index	12/31/85	06/01/95
RT200V	RUS TOP 200 VAL	Russell Top 200 Value Index	12/31/85	06/01/95

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
RU1000	RUSSELL 1000	Russell 1000 Index-Total Return	12/31/78	01/02/79
RU2000	RUSSELL 2000	Russell 2000 Index-Total Return	12/31/78	01/02/79
RU2500	RUSSELL 2500	Russell 2500 Index - Total Return	12/31/78	01/02/91
RU3000	RUSSELL 3000	Russell 3000 Index-Total Return	12/31/78	01/02/79
R1GEW	R1000 GR EQ WTD	Russell 1000 Growth Index: Equal-Weighted	12/31/78	
R1VEW	R1000 VL EQ WTD	Russell 1000 Value Index: Equal-Weighted	12/31/78	
R1000E	R1000 EQ WTD	Russell 1000 Index: Equal-Weighted	12/31/78	
R1000G	R1000 GROWTH	Russell 1000 Growth Index-Total Return	12/31/78	01/02/91
R1000V	R1000 VALUE	Russell 1000 Value Index-Total Return	12/31/78	01/02/91
R2EW	R200 EQ WTD	Russell Top 200 Index:Equal-Weighted	01/31/89	
R2GEW	R200 GR EQ WTD	Russell Top 200 Growth Index:Equal-Weighted	06/30/95	
R2KGEW	R2000 GR EQ WTD	Russell 2000 Growth Index:Equal Weighted	01/31/79	
R2KVEW	R2000 VL EQ WTD	Russell 2000 Value Index:Equal Weighted	01/31/79	
R2VEW	R200 VL EQ WTD	Russell Top 200 Value Index:Equal-Weighted	06/30/95	
R2000E	R2000 EQ WTD	Russell 2000 Index: Equal-Weighted	12/31/78	
R2000G	R2000 GROWTH	Russell 2000 Growth Index-Total Return	12/31/78	06/01/93
R2000V	R2000 VALUE	Russell 2000 Value Index-Total Return	12/31/78	06/01/93
R25GEW	R2500 GR EQ WTD	Russell 2500 Growth Index:Equal Weighted	02/28/86	
R25VEW	R2500 VL EQ WTD	Russell 2500 Value Index:Equal Weighted	02/28/86	
R2500E	R2500 EQ WTD	Russell 2500 Index: Equal-Weighted	12/31/86	
R2500G	R2500 GROWTH	Russell 2500 Growth Index-Total Return	12/31/85	06/01/95
R2500V	R2500 VALUE	Russell 2500 Value Index-Total Return	12/31/85	06/01/95
R3GEW	R3000 GR EQ WTD	Russell 3000 Growth Index: Equal Weighted	12/31/78	
R3LGCP	R3000 LG CAP	Russell 3000 Index-Large Cap Sector	12/31/78	
R3ML	R3000 MED/LG	Russell 3000 Index-Medium/Large Cap Sector	12/31/78	
R3MS	R3000 MED/SM	Russell 3000 Index-Medium/Small Cap Sector	12/31/78	
R3SSC	R3000 SP SM CO	Russell Special Small Company Index	12/31/79	
R3VEW	R3000 VL EQ WTD	Russell 3000 Value Index:Equal Weighted	01/31/79	
R3000E	R3000 EQ WTD	Russell 3000 Index: Equal-Weighted	12/31/78	
R3000G	R3000 GROWTH TR	Russell 3000 Growth Index - Total Return	12/31/78	06/01/95
R3000M	R3000 MEDIUM	Russell 3000 Index-Medium Cap Sector	12/31/78	06/01/95
R3000V	R3000 VALUE TR	Russell 3000 Value Index - Total Return	12/31/78	
SBASH	SSB ALL SEC HY	Salomon Smith Barney All Securities-High Yield	12/31/84	
SBBB	SSB BRADY BOND	Salomon Smith Barney Brady Bond Index	03/31/90	
SBBIG	SSB BIG	Salomon Smith Barney Broad Investment-Grade B	12/31/79	
SBBMT	SSB BIG MED TRM	Salomon Smith Barney Broad Inv.-Grade Bond M	12/31/79	
SBCD1	SSB CD 1 MO	Salomon Smith Barney CD - 1 Month	01/31/78	
SBCD3	SSB CD 3 MO	Salomon Smith Barney CD - 3 Month	12/31/77	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
SBCD6	SSB CD 6 MO	Salomon Smith Barney CD - 6 Month	12/31/77	
SBCRP	SSB CRP	Salomon Smith Barney Corporate Bond Index	12/31/79	
SBCRPH	SSB CRP HGR	Salomon Smith Barney Corporate-High Grade	12/31/68	
SBC10	SSB CORP 10+	Salomon Smith Barney Corp 10+	12/31/79	
SBEHM	SSB EXT HY MKT	Salomon Smith Barney Ext High Yield Market	01/31/91	
SBGC13	SSB G/CORP 1-3	Salomon Smith Barney Government/Corp 1-3 yrs	12/31/79	
SBGC15	SSB G/CORP 1-5	Salomon Smith Barney Government/Corp 1-5 yrs	01/31/80	
SBGDP	SSB GDP BMI NUS	Salomon Smith Barney GDP BMI Non-US Index	12/31/89	
SBGNMA	SSB GNMA	Salomon Smith Barney GNMA Index	12/31/79	
SBHCP	SSB HY CASH PAY	Salomon Smith Barney High Yield Cash Pay Indx	12/31/88	
SBHM7	SSB HY MKT 7+	Salomon Smith Barney High Yield Market Idx 7+	01/31/85	
SBHYI	SSB HY INT	Salomon Smith Barney High Yield-Intermediate	06/30/85	
SBHYL	SSB HY LT	Salomon Smith Barney High Yield-Long Term	12/31/84	
SBHYM	SSB HY MARKET	Salomon Smith Barney High Yield Market Index	11/30/80	
SBLPB	SSB LPF BOND	Salomon Smith Barney Lg Pen Bond	01/31/80	
SBLPF	SSB LPF CORP	Salomon Smith Barney Lg Pen Fund Corp	01/31/80	
SBMS	SSB MRTG SEC	Salomon Smith Barney Mortgage Securities	12/31/79	
SBNUS	SSB WGBI N-US	Salomon Smith Barney WGBI Non-U.S.	01/31/95	
SBPENL	SSB PEN LIAB	Salomon Smith Barney Pension Liability Index	12/31/88	
SBTA10	SSB TRS/AGY 10+	Salomon Smith Barney Treas/Agency 10+	01/31/80	
SBTA13	SSB TRS/AGY 1-3	Salomon Smith Barney Treas/Agency 1-3	01/31/80	
SBTN02	SSB T-NOTE 2YR	Salomon Smith Barney Treasury Note-2Yr	12/31/79	
SBTN05	SSB T-NOTE 5YR	Salomon Smith Barney Treasury Note-5 Yr	12/31/79	
SBTN10	SSB T-NOTE 10YR	Salomon Smith Barney Treasury Note-10 Year	12/31/79	
SBTN30	SSB T-NOTE 30YR	Salomon Smith Barney Treasury Note-30 Yr	12/31/79	
SBTR13	SSB TRS 1-3	Salomon Smith Barney Treasury 1-3 Years	12/31/79	
SBTR20	SSB TRS 20+	Salomon Smith Barney Treasury 20+ Years	12/31/79	
SBT1Y	SSB T-BILL 1 YR	Salomon Smith Barney Treasury Bill-1 Yr	12/31/79	
SBT10	SSB TRS 10+	Salomon Smith Barney Treasury 10+ Years	01/31/80	
SBT3M	SSB T-BILL 3 MO	Salomon Smith Barney Treasury Bill-3 Month	12/31/77	
SBT30D	SSB T-BILL 30 D	Salomon Smith Barney Treasury Bill-30 Day	12/31/77	
SBT6M	SSB T-BILL 6 MO	Salomon Smith Barney Treasury Bill-6 Month	12/31/77	
SBUSE	SSB US EURODEP	Salomon Smith Barney U.S. Dollar-Eurodeps	12/31/77	
SBUWG	SSB US WLD G	Salomon Smith Barney U.S. World Govt. Bond	12/31/84	
SBWGB	SSB WGBI	Salomon Smith Barney World Govt. Bond Index	01/31/85	
SMIDCP	S&P MIDCAP	Standard and Poors MidCap 400 Index	02/28/81	
SPMIDG	S&P MIDCAP GROW	Standard and Poors/Barra MidCap Growth Index	06/30/91	
SPMIDV	S&P MIDCAP VAL	Standard and Poors/Barra MidCap Value Index	06/30/91	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
SP100	S&P 100	Standard and Poors 100	01/31/88	
SP1500	S&P 1500	Standard and Poors 1500 Super Composite	01/31/95	
SP500G	S&P 500 GROWTH	Standard and Poors 500 / Barra Growth Index	12/31/74	
SP500I	S&P 500 INDEX	Standard and Poors 500 Index - Total Return	12/31/61	
SP500P	S&P 500 PRICE	Standard and Poors 500 Index - Price Return	12/31/61	
SP500V	S&P 500 VALUE	Standard and Poors 500 / Barra Value Index	12/31/74	
SP600	S&P 600 INDEX	Standard and Poors Smallcap 600 Index	02/29/84	
SP600G	S&P 600 GROWTH	Standard and Poors 600/Barra Growth Index	12/31/93	
SP600V	S&P 600 VALUE	Standard and Poors 600/Barra Value Index	12/31/93	
S1000I	S&P 1000 INDEX	Standard and Poors 1000 Index - Total Return	01/31/95	
S1000P	S&P 1000 PR	Standard and Poors 1000 Index - Price Return	01/31/95	
S500EF	S&P500 EQWTD- FR	S&P 500 Index: Equal-Weighted *FRC	02/28/97	
S500SC	S&P500-S&P CALC	S&P 500 Index-Total Return Index (S&P Calc)	12/31/69	
TROWE 1	TROWE 1YR GIC	T Rowe Price 1 Year GIC	01/31/89	
TROWE 2	TROWE 2YR GIC	T Rowe Price 2 Year GIC	01/31/89	
TROWE 3	TROWE 3YR GIC	T Rowe Price 3 Year GIC	01/31/89	
TROWE 4	TROWE 4YR GIC	T Rowe Price 4 Year GIC	01/31/89	
TROWE 5	TROWE 5YR GIC	T Rowe Price 5 Year GIC	01/31/89	
USCPI	US CPI	US Consumer Price Index	01/31/74	
VALCNV	VAL LINE CNV	Value Line Convertible Index	12/31/85	
VALPR	VAL LINE PRICE	Value-Line Composite-Price Return	12/31/85	
WILLCG	TAR LG GROW	Target Large Growth Index	12/31/87	
WILLCV	TAR LG VALUE	Target Large Value Index	12/31/77	
WILMCG	TAR MID CAP GRO	Target Mid Cap Growth Index	12/31/77	
WILMCV	TAR MID CAP VAL	Target Mid Cap Value Index	12/31/77	
WILRES	WIL RE SECURITY	Wilshire Real Estate Security	01/31/78	
WILSCG	TAR SM GROW	Target Small Growth Index	12/31/77	
WILSCV	TAR SM VALUE	Target Small Value Index	12/31/77	
WILT25	WIL TOP 2500	Wilshire Top 2500 Index	12/31/77	
WILT75	TAR TOP 750	Target Top 750 Index	12/31/77	
WIREIT	WIL REIT	Wilshire REIT Index	11/30/78	
WLGI	WIL LRG GROWTH	Wilshire Large Growth	07/31/78	
WLVI	WIL LRG VALUE	Wilshire Large Value	06/30/78	
WMCI	WIL MICRO CAP	Wilshire Micro Cap	06/30/78	
WMGI	WIL MID GROWTH	Wilshire Mid Growth	06/30/78	
WMVI	WIL MID VALUE	Wilshire Mid Value	06/30/78	
WSGI	WIL SM GROWTH	Wilshire Small Growth	06/30/78	
WSVI	WIL SM VALUE	Wilshire Small Value	06/30/78	

Frank Russell Benchmarks			Data Start Date	
SNAM	**Short Description**	**Description**	**Monthly**	**Daily**
W1750	WIL1750 SML CAP	Wilshire Small Cap 1750 Index	12/31/77	
W4500	WIL4500	Wilshire 4500 Index	12/31/83	
W5000E	WIL5000 EQL TOT	Wilshire 5000 Equal-Weighted Total Perf Index	12/31/70	
W5000V	WIL5000 VAL TOT	Wilshire 5000 Value-Weighted Total Perf Index	12/31/70	
W750MC	TAR750 MID CAP	Target Mid Cap 750 Index	12/31/77	

Chapter 10: Blended Benchmarks

A blended benchmark is the combination of various benchmarks linked together to provide more accurate performance reporting for accounts that contain a variety of asset types.

10.1 Setting up a blended benchmark

The benchmark account is set up in a similar manner as an active account. However, the account has no portfolio data, no general ledger data, and only contains performance data in the Manual sector.

Although EDITAC can be used to set up a blended benchmark, NEWACCT is recommended, since it enables you to set up of multiple benchmarks.

10.2 Using NEWACCT to set up a blended benchmark account

Use the following steps:

1. At the APL Expert WHAT NEXT? prompt, type NEWACCT and press ENTER. The NEWACCT editor will appear:

```
WHAT NEXT?: ? NEWACCT

NEWACCT

TYPE *HELP FOR FOLLOWING MESSAGE:

ENTER INFO INDICATED FOR EACH NEW ACCOUNT TO ADD

SELL CODE: 1=LIFO, 2=FIFO, 3=MINTAX, 4=HIGH COST, 5=AVG COST, 6=LOW COST SHORT
NAMES WILL BE CHECKED FOR UNIQUENESS AFTER CLOSE OUT

(0)   SNAM   ACNUMRR  SELL TITLE (1)   ----   ------- ---- -----

(2)
```

2. Each benchmark is entered on its own line. The system automatically aligns the columns. Use the following values to set up the account:

Field	Description
SNAM	The pre-assigned short name for the Russell benchmark
ACNUM	0 for the account number

Field	Description
RR	100 for the registered representative
SELL	0 for the sell code
TITLE	Name of the benchmark. Name can be no longer than 40 characters, including spaces. This should be kept in mind as the name of the benchmark can be truncated on reports that do not allow enough space for the entire benchmark name

3. Type (Q and press ENTER to save data
4. Type (Q and press ENTER again to exit the NEWACCT editor. The system then runs the POSTGL function automatically. Since this is a benchmark account, there is no data required and the function can be exited
5. Type (Q and press ENTER to save the OPE entry posted for the account
6. Type (Q and press ENTER to exit the editor. The following prompt will appear:

```
DO YOU WANT TO POST THESE ENTRIES NOW?
```

Note: The OPE line does not have the same meaning as with active accounts. Therefore, it is optional whether or not the entry is posted.

7. Choose one of the following options
   - To not post entries, type N and press ENTER. If you choose not to post the entry, a file is created with the entry and is stored under the name POSTGL.P#, where # is the populated based on the number of times POSTGL is run during an APL session. For example, an active account is set up but the OPE entry is not posted. If this is the first time POSTGL is being running during the current APL Session, the file will be named POSTGL.P01. The next time POSTGL is run, during the same APL session, the file will be named POSTGL.P02
   - To post the entries, type Y and press ENTER
8. **If the client is set up to use INFODEX**, the system starts the INFODEX Account Master screen. Since this is a benchmark, it does not have to be set up in INFODEX. Press F3 to exit the INFODEX Account Master screen; then select No to not save changes.
9. The following prompt will appear:

```
DO YOU WANT TO RUN UPDATENEW NOW?
```

9. UPDATENEW updates Windows to include the account for use in reporting and/or trading. Since this is benchmark account, it does not need to be included in a specific Windows universe. Type N and press ENTER

The benchmark account is now successfully set up. The next step is to map the benchmark account to the benchmark identifier, or short description, for updating.

10.3 Identifying the account as a blended benchmark using EDDESPCT

The next step is to identify the benchmark account as a blended benchmark. This is done using the function EDDESPCT.

> **Note:** The EDDESPCT table is used for establishing relationships between accounts. Besides blended benchmarks, this table is often used to combine data from two or more accounts into a third account. More information can be found in the APL Portfolio Administration (EXPERT) System User Guide.

Use the following steps:

1. At the APL Expert WHAT NEXT? prompt, type EDDESPCT and press ENTER. The screen editor will appear, and displays the EDDESPCT table:

```
WHAT NEXT? EDDESPCT

EDDESPCT (PUBLIC)

SNAM   RA CATEGORY,PCT,CATEGORY,PCT,...ETC

(1) EDDESPC

(2) AFFLBE -1  BOGAHU

(3) AIKMTR -1  TRSMST

(4) BALLLU -1  BOGAHU

(5) BARKCH -1  BOGAHU

(6) BERGIN -1  BOGAHU

(7) BULLSA -1  BOGAHU

(8) CAGNJA -1  BOGAHU

(9) CDANEK -1  GIBSML,GARLJU, NEWMPA,HOPEBO,ASTAFR

(10) BLEND  -4  SHLGCI/30/SP500T/50/DJIAT/20 (206)
```

Column	Description
1	Line numbers
2	Short name (SNAM) of the target account
3	Data type. Use -4 for blended benchmarks

Column	Description
4	Source benchmarks and ratios. The format used for blended benchmarks is: SNAM/nn/SNAM/nn/SNAM/nn where: • SNAM is the short name of the benchmark • nn is the percent of the account that the benchmark represents

Note: In the example above, Line 10 shows a blended benchmark in which three different Russell benchmarks (SHLGCI, SP500T, and DJIAT) are combined at 30%, 50%, and 20% respectively) into a single SNAM called BLENDED.

2. On the first line available, type in the SNAM for the individual benchmarks and what percent of each benchmark should be included in the blended benchmark
3. Type (Q and press ENTER to save the changes
4. Update the blended benchmark by using the function REFBLNDBNCH

10.4 Updating a blended benchmark with REFBLNDBNCH

1. At the WHAT NEXT? prompt, type REFBLNDBNCH and press ENTER. The following prompt will appear:

```
+-------------------------------------------------------------------------------
+
|BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
+-------------------------------------------------------------------------------
+
```

2. Enter the month-end date from which the refreshing of the blended benchmark should start. A screen will appear listing all of your blended benchmarks

```
+-----------------------------------+
|Select Benchmarks to Update     |
|-----------------------------------|
| BLEND  SHLGCI/30/SP500T/50/DJIAT/20|
+------------------+-----------------------------------+------------------+
|Esc-Exit  F1-Help   F4-Search   SF5-Select ALL  SF6-Clear ALL|
```

```
|F7-Refresh Search   F8-Options  F10-Go   Return-Select/Un-Select|
+-------------------------------------------------------------------------+
```

3. Use the arrow keys to locate the blended benchmark(s) to be refreshed. If you want to select all of them, press SHIFT+F5
4. Press F10 to begin refreshing. The following screen will appear:

```
+-------------------------------------------+
|Do You Want to Look at Month-End Values Only ?|
|-------------------------------------------|
|NO|
|YES|
+-------------------------------------------+
```

A screen will then appear asking if you want to look at month-end values only.

- If the indices that comprise the blended benchmark have daily values for the same days and you want to report daily numbers, select NO and press ENTER
- If the indices that comprise the blended benchmark have month-end values only or you do not want daily values, select YES and press ENTER. After several informational messages, The following prompt will appear on screen, in sequence:

```
UPDATING DJSP
USING MONTH-END VALUES ONLY UPDATE FOR DJSP COMPLETE BLNDBNCH.LSR
```

The print file, BLNDBNCH.LSR, says the same thing that is on the screen. If there were errors, they would be stored in this file as well.

If an error occurs, delete the data in the performance file for the blended benchmark and refresh the blended benchmark again.

> **Note:** Where indices are updated daily, REFBLNDBNCH can be included in a control job to be run on a nightly basis.

10.5 Calculating blended benchmarks

The method used for calculating a blended benchmark is described below.

1. Calculate the specified percent of each individual benchmark that comprise the blended benchmark
2. Add the returns together to come up with the monthly return for the blended benchmark
3. Convert each monthly return to a decimal by dividing the number by 100

4. Add 1 to the number in Step 3
5. Link the returns in the period by multiplying them together
6. Subtract 1 from the number in Step 5
7. Convert the number in Step 6 to a percent by multiplying the number by 100

10.6 Understanding the PMCOMP blended benchmark

The PMCOMP blended, or composite, benchmark is created “on the fly” when running the PMHISTPI or PMHISTSECT performance reports.

The system prompts for a benchmark for each performance sector set up for the user. The system combines these benchmarks based on the accounts sector distribution. The market values for each sector are multiplied by the benchmark return for each sector. These returns are then added together to create the total PMCOMP return.

Chapter 11: Utility Functions and Reports

This chapter describes utility functions relating to benchmarks. It also describes reporting functions that relate to benchmarks.

11.1 Utility functions

The following utility functions enable you to manage your benchmarks:

- ADDFNDVAL enables you to calculate a mid-month value for all available benchmarks. See Calculate mid-month performance using ADDFNDVAL.
- POSTBENCH enables you to post data manually for benchmarks not maintained by the standard Security APL process. See Post other returns and indices using POSTBENCH
- VERIFYIND verifies that the list of benchmarks specified in EDGLOBALMEMO have been updated, and writes the results to a report. See Verify that indices are updated, using VERIFYIND.

Calculate mid-month performance using ADDFNDVAL

ADDFNDVAL is a function that will automatically calculate a mid- month value for all available benchmarks. In turn this will allow clients to report mid-month returns on their benchmarks.

Please note that this function pulls from the OPEDT field in EDAC to base the calculation and has to be coded before running this function. The OPEDT should match the first value in the performance file in order to show a return. This function should not be run until the value has been received and updated.

> **Note:** An updated version of this function, ADDFNDVAL2, recalculates previously posted or calculated values in the performance file. (ADDFNDVAL does not.) Contact us to see if this function is appropriate for your macros and control jobs.

To use ADDFNDVAL, follow these steps:

1. At the WHAT NEXT? prompt, type ADDFNDVAL and press ENTER. The following prompt will appear:

```
WHAT NEXT? ADDFNDVAL

ADDFNDVAL (PUBLIC)

ENTER BENCHMARK SNAMS

1586 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

2. Type the short names (SNAMs) of the indices to which the mid- month value should be posted and press ENTER. The following prompt will appear:

```
ENTER ACCOUNTS WHICH DETERMINE DATES TO POST VALUES FOR

1586 ACCOUNTS CURRENTLY ON FILE

SEARCH FOR WHAT?
```

3. Type the SNAM(s) of the accounts you are comparing the index to, and press ENTER. The system posts a value to the manual sector for the date coded in the OPEDT field for the account

Post other returns and indices using POSTBENCH

POSTBENCH enables you to track an index APL does not provide or to post daily returns for indices not available on a daily basis from APL. To use POSTBENCH, follow these steps:

1. At the WHAT NEXT? prompt, type POSTBENCH and press ENTER. A prompt will appear, enabling you to specify a filename if you are uploading values from a file

```
+------------------------------------------------------------------------------
+

|ENTER BENCH FILE NAME (HIT ENTER IF NONE):

+------------------------------------------------------------------------------
+
```

2. To upload a file, containing benchmark data, type the file name and press ENTER. Specify the file name as follows: /u/directory/file (For example, /u/ibm02/bench.asc)

Otherwise, to manually input data, simply press ENTER. The input screen will appear:

```
SAMPLE ASSET MANAGEMENT F-1 for options

09/26/02 1:28 P.M. F-3 to Quit

F-8 to sort

F-10 to Save

Benchmark Maintenance Screen

---------------------------

Type of Dom/

Index Date Return(%) Return Intl

------ ---------- ---------- ---------------- ------
```

```
TOFU 20020925 14.22100 MONTHLY INTL
```

> **Note:** If a file was entered to be uploaded, the screen will appear with the data already filled in. You can make any changes to the data and go directly to Step 4 when you are ready to exit and save the data.

Field	Description
Index	SNAM for the index
Date	Date for which you are entering the return
Return(%)	Return, in percent
Type of Return	Type of return. Press F1 to select from the following options: • DAILY • MONTHLY • PRO-RATE QUARTERLY • QUARTERLY
Dom/Intl	Domestic or international. Press F1 to select. **Note:** If you are tracking indices, such as the Morgan Stanley EAFE, that have returns posted on US holidays, you need to identify the index as an International index. Doing this will enable you to post the return without receiving the error you're trying to post a return on a non-business day.

3. To exit and save, press F10. (Otherwise, press F3 to exit without saving.) When F10 is pressed, the following options appear:

```
+---------------------------+
|Choose one of the followings|
|---------------------------|
| BACK TO PREVIOUS SCREEN   |
| SAVE DATA TO FILE|
| PRO-RATE QUARTERLY RETURNS |
| POST DATA|
+---------------------------+
```

Option	Description
BACK TO PREVIOUS SCREEN	Returns to the data input screen
SAVE DATA TO FILE	Creates a data file of the entered data for downloading
PRO-RATE QUARTERLY RETURNS	Prorates the quarterly returns tagged for this type of processing
POST DATA	Posts the data to the performance files for the indices your are updating

Note: If any of the data entered is incomplete or inconsistent, a message will appear informing you of this and will not let you save the data.

Verify that indices are updated, using VERIFYIND

VERIFYIND allows user to verify that an index has been updated.

Note: VERIFYIND uses the list of indices defined in the EDGLOBALMEMO function. For more information on this function, see the APL Portfolio Administration (EXPERT) System User Guide.

To use this function, follow these steps:

1. At the APL Expert WHICH FUNCTION:? prompt, type VERIFYIND and press ENTER. The system responds with a request for an as-of date:

```
WHICH FUNCTION: ? VERIFYIND

VERIFYIND (PUBLIC)

AS OF DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

2. Press ENTER to accept today's date, or enter another date and press ENTER. The system verifies that the indices specified in the EDGLOBALMEMO table are present. If not, these are listed in a warning message. Then, the system writes the report in the file VERIND.LRP

```
WHICH FUNCTION: ? VERIFYIND

VERIFYIND (PUBLIC)

AS OF DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :

Warning!!! The Following Indices Are Not Found in EDAC

SPMIDBARRAG    BARRAV   CSMMI*    PODLC*   PODLG*   PODLV* PODMC*   PODMG*
PODMV*    PODNC*   PODNG*   PODNV*    R2000 SPMIDR3GTRR3VTRCPIRUAZRU

Verifying 396 Indices
```

```
PROCESSING 396 OF 396

Verification Report Stored in VERIND.LRP
```

A sample of this report is shown below:

```
09/27/02 10:40 A.M. Benchmark Verification Report PAGE 1

As of September 26, 2002

---------------------------

Last Month Quarter to Date Year to Date Incept

08/31 - 09/26 06/30 - 09/26 12/31 - 09/26 to Date

------------- ------------- ------------- ----------

SP500T S & P 500 Total -6.47 -13.19 -24.61 23.43

DJIAT Dow Jones Industrial Average Total -7.49 -12.96 -18.98 25.84

DJIA Dow Jones Industrial Average -7.69 -13.48 -20.20 8.57

DJIAT Dow Jones Industrial Average Total -7.49 -12.96 -18.98 25.84

R2000T Russell 2000 Total N/A N/A N/A N/A

SP500 S & P 500 Price -6.67 -13.63 -25.53 6.60

SP500T S & P 500 Total -6.47 -13.19 -24.61 23.43

COMPQ NASDAQ Composite (RAW) -7.09 -16.61 -37.39 1.88

CPI320 Consumer Price 320 0.33 0.50 1.86 1.27
```

11.2 Benchmark reports

There are several reports that can be run on a benchmark account:

- BENCHLIST lists benchmarks available on the APL system. See Listing available benchmarks with BENCHLIST.
- PMFIRMFLEX compares the performance of selected accounts to one or two selected benchmarks. See Compare performance to benchmarks using PMFIRMFLEX.
- PMHISTSECT reports selected performance data. See View selected performance data, with PMHISTSECT.

Listing available benchmarks with BENCHLIST

BENCHLIST allows user to search for a particular benchmark as well as get a printed list of all benchmarks available on the APL system. It lists the short names and long descriptions for the APL Maintained and FT Interactive benchmarks and the short name, short descriptions and long descriptions for the Frank Russell benchmarks.

```
WHICH FUNCTION: ? BENCHLIST

BENCHLIST (PUBLIC)

This program allows the user to search for a particular benchmark Or list out
all the benchmarks that are available on APL

(S)earch, (P)rint all or (Q)uit?: ?
```

Option	Description
(S)earch	Enables you to search for a specific string, and list all matches
(P)rint all	Outputs all benchmarks to a print file, BENCH.LST, which can be viewed using the BROWSE function
(Q)uit	Exits this function

Compare performance to benchmarks using PMFIRMFLEX

PMFIRMFLEX reports selected performance data since the end of your firm's previous reporting period (quarter or month) and compare it to one or two benchmarks. To generate this report, follow these steps:

1. At the APL Expert WHICH FUNCTION:? prompt, type PMFIRMFLEX and press ENTER. The following prompt will appear:

```
WHICH FUNCTION: ? PMFIRMFLEX

PMFIRMFLEX (PUBLIC)

INCLUDE ACCOUNTS NOT IN WHOLE PERIOD ?
```

2. Type Y if you want to include accounts that were opened after the beginning of the period; otherwise, type N. Then, press ENTER. The following prompt will appear:

```
AS OF DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

3. Type the as-of date, and press ENTER. The following prompt will appear

```
1586 ACCOUNTS CURRENTLY ON FILE SEARCH FOR WHAT?
```

Specify the accounts you want to report on, and press ENTER.

> **Note:** A convenient way to select accounts is to use the \SELECTAC utility.

The following prompt will appear:

```
S SNAM C CUST1
B BWNUM X MARG
D DTCNO A ADM
M MGR G BEGDTE
L LNAME T FDTYPE
O OPEDT J OBJECT
Z CLODT K CUST2
N NDATE E SOURCE
F FIRST DATE IN P01 FILE H CUST7
I INFODEX LNAME1 (IF AVAILABLE)
SELECT ACCOUNT COLUMNS?
```

4. Select which columns in the Account Master you want to include in the report. Enter the character that is shown to the left of the Account Master field description, separating each selection by a space. Then, press ENTER. The following prompt will appear:

```
V ALL VALUES
P VALUES FOR TOTAL, % FOR OTHERS
N NONE
SELECT VALUE COLUMNS? V
```

5. Select V for all values, P for totals and percentages, or N for returns only (without market values). Then, press ENTER. The following prompt will appear:

```
AVAILABLE FILES; (01=TOTAL PORTF 02=EQUITIES 03=FIXED INCOM 04=CASH EQUIVA
05=TE
INCLUDE WHICH FILES (4 MAX.)?
```

6. Type the codes for the type of portfolios you wish to report on, and press Enter. The following prompt will appear:

```
1 ONE DAY FROM 09/25/02 TO 09/26/02
2 MONTH TO DATE FROM 08/31/02 TO 09/26/02
3 TRAILING 3 MONTH FROM 06/30/02 TO 09/26/02
4 QUARTER TO DATE FROM 06/30/02 TO 09/26/02
5 TRAILING 12 MONTH FROM 09/30/01 TO 09/26/02
6 YEAR TO DATE FROM 12/31/01 TO 09/26/02
7 LAST CALENDAR YEAR FROM 12/31/00 TO 12/31/01
8 LAST CALENDAR QUARTER FROM 03/31/02 TO 06/30/02
9 LAST CALENDAR MONTH FROM 07/31/02 TO 08/31/02
10 2 YEARS ANNUALIZED FROM 08/31/00 TO 08/31/02
11 3 YEARS ANNUALIZED FROM 08/31/99 TO 08/31/02
12 5 YEARS ANNUALIZED FROM 08/31/97 TO 08/31/02
13 7 YEARS ANNUALIZED FROM 08/31/95 TO 08/31/02
14 10 YEARS ANNUALIZED FROM 08/31/92 TO 08/31/02
15 INCEPTION TO DATE
16 INCEPTION TO DATE ANNUALIZED
17 SELECT DATES
18 SELECT DATES ANNUALIZED
SELECT UP TO 1 PERFORMANCE MEASURES?
```

7. Select the reporting periods you want to use, and press ENTER. The following prompt will appear:

```
ENTER TITLE (Maximum of 44 characters):
```

8. Type the title of your report, and press ENTER. A series of similar prompts are displayed. The actual prompts depend on the files you selected in an earlier step

```
WHAT BENCHMARKS (I.E. SP500 DJIA) FOR TOTAL PORTFOLIO   SP500 DJIA
WHAT BENCHMARKS (I.E. SP500 DJIA) FOR EQUITIES   SP500 DJIA
WHAT BENCHMARKS (I.E. SP500 DJIA) FOR FIXED INCOME   SP500 DJIA
WHAT BENCHMARKS (I.E. SP500 DJIA) FOR CASH EQUIVALENTS   SP500 DJIA
```

9. Select the benchmarks you wish to include for each portfolio segment you selected earlier. Separate each benchmark code with a space

A list of benchmarks can be found in the following chapters:

- FT Interactive Data Benchmarks
- Russell Benchmarks

You can also display or print a list of benchmarks using the BENCHLIST function. See Listing available benchmarks with BENCHLIST

When you have finished selecting benchmarks, a series of prompt will appear, showing the progress of report processing. This is followed by a prompt asking you to select which field to sort on. An example is shown below:

```
WARNING: MORE THAN ONE APPRAISAL FOR SAME DATE(S) 10/29/85 01/17/86 03/29/88
04/

WARNING: MORE THAN ONE APPRAISAL FOR SAME DATE(S) 10/29/85 01/17/86 03/29/88
04/

Calculating Performance for TOTAL PORTFOLIO sector...

Please Wait...[******************]

Calculating Performance for EQUITIES sector...

Please Wait...[******************]

Calculating Performance for FIXED INCOME sector...

Please Wait...[******************]

Calculating Performance for CASH EQUIVALENTS sector...

Please Wait...[******************]

0 EXIT

1 SNAM

2 CUST1

3 MGR

4 NDATE

5 SOURCE

6 TOTAL PORTFOLIO VALUE

7 TOTAL PORTFOLIO 5 YEARS ANNUAL

8 EQUITIES VALUE

9 EQUITIES 5 YEARS ANNUAL

10 FIXED INCOME VALUE

11 FIXED INCOME 5 YEARS ANNUAL

12 CASH EQUIVALENTS VALUE

13 CASH EQUIVALENTS 5 YEARS ANNUAL
```

```
SELECT SORT KEY (0 TO EXIT)
```

10. Select the sort key you require, and press ENTER. The following prompt will appear:

```
ASCENDING OR DESCENDING?
```

11. Select whether you want the sort key sorted in ascending or descending order, and press ENTER. The report is generated, and is saved in a file that can be viewed using the BROWSE function. An example of this report is shown below

```
SUMMARY PERFORMANCE REPORT

AS OF September 26, 2002

Example Report

SNAM FEQ SHARON PANEJO HOPEBO CROSBI CAGNJA HEPBKA BERGIN BECALA TAYLLI MONRMA
BOGAHU GRANCA TRACSP CHAPCH DEANJA TEMPSH

ROONMI

SORT : SNAM ASCENDING

TOTAL PORTFOLIO PERF EQUITIES PERF FIXED INCOME PERF CASH EQUIVALENTS PERF

5 YEARS 5 YEARS 5 YEARS 5 YEARS

SNAM CUST1 MGR NDATE SOURCE VALUE ANNUAL VALUE ANNUAL VALUE ANNUAL VALUE
ANNUAL

------ ------ ------ -------- ------ ------------ ------ ------------ ------ -
----------- ------ ------------ ------

AFFLBE TRAIN MOE 05/11/00 TRAIN 2.84 -7.16 25.24 -52.39

ASTAFR BILL TS 06/08/94 TRAIN 5.21 0.66 10.76 -4.61

BALLLU TRAIN MOE 05/19/97 TRAIN 2.84 -7.16 25.24 -52.39

BARKCH TRAIN MOE 05/11/00 TRAIN 2.84 -7.16 25.24 -52.39

BECALA BILL TS 06/08/94 TRAIN 0.71 3.67 27.11 -0.15

BENDRE MOE 01/22/02

BERGIN TRAIN MOE 06/08/94 TRAIN 2.84 -7.16 25.24 -52.39

BOGAHU TRAIN MOE 06/08/94 TRAIN 2.84 -7.16 25.24 -52.39

BULLSA TRAIN MOE 05/11/00 TRAIN 2.84 -7.16 25.24 -52.39

CAGNJA TRAIN MOE 06/08/94 TRAIN 2.84 -7.16 25.24 -52.39

CHAPCH TRAIN TS 06/08/94 TRAIN 0.06 -0.31 6.36 -16.77

CIS TRAIN MOE 06/09/99 TRAIN -1.77 -8.46 8.33 9.62
```

```
...
SP500 -100.00 SP500 -100.00 SP500 -100.00 SP500 -100.00
DJIA 2.59 DJIA 2.59 DJIA 2.59 DJIA 2.59
```

View selected performance data, with PMHISTSECT

PMHISTSECT allows user to view selected performance data. A maximum of three benchmarks can be compared on this report.

To use PMHISTSECT, follow these steps:

1. At the APL Expert WHICH FUNCTION:? prompt, type PMHISTSECT and press ENTER. The following prompt will appear:

```
WHICH FUNCTION: ? PMHISTSEC
PMHISTSECT
BEGINNING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

2. Type the beginning date for the report, and press ENTER. The following prompt will appear:

```
ENDING DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

3. Type the ending date for the report, and press ENTER. The following prompt will appear:

```
YEARS TO INCLUDE IN THE QUARTERLY PERFORMANCE
```

4. Type the number of years of portfolio data you want to use (counting backward from the current year). Then, press ENTER. The following prompt will appear:

```
VAILABLE FILES; (P01=TOTAL PORTF P02=EQUITIES P03=FIXED INCOM P04=CASH EQUIVA
P
WHICH FILE?
```

5. Type the number of the portfolio segment you want to include in the report. Then, press ENTER. The Account Selection prompt will appear:

```
586 ACCOUNTS CURRENTLY ON FILE
SEARCH FOR WHAT?
```

6. Specify the accounts for which you want to generate reports. Then, press ENTER. The following prompt will appear:

```
WHICH BENCHMARK(E.G. DJIA, SP500, COMPQ, PMCOMP FOR COMPOSITE ) : PMCOMP
```

7. Type the codes for the benchmarks you want to use. Up to two benchmarks may be selected. Then, press ENTER. A report for each selected account is generated

If you have selected PMCOMP, you are asked to specify which benchmarks are associated with each portfolio category. You are also asked to name the composite. The prompts shown below are typical:

```
WHICH BENCHMARK(E.G. DJIA, SP500, COMPQ, PMCOMP FOR COMPOSITE ) : PMCOMP
ENTER COMPOSITE BENCHMARK INFORMATION
ENTER BENCHMARK FOR EQUITIES : DJIA
ENTER BENCHMARK FOR FIXED INCOME : SP500
ENTER BENCHMARK FOR EQUITY CORE : DJIA
ENTER BENCHMARK FOR GROWTH CORE : DJIA
ENTER BENCHMARK FOR LARGE CAP CORE : DJIA
ENTER BENCHMARK FOR LARGE CAP GROWTH CORE : DJIA
ENTER BENCHMARK FOR LARGE CAP VALUE CORE : DJIA
ENTER BENCHMARK FOR SMALL CAP GROWTH CORE : SP500
ENTER BENCHMARK FOR SMALL CAP VALUE CORE : COMPQ
ENTER BENCHMARK FOR CASH :
ENTER COMPOSITE TITLE : BIG COMPOSITE
```

A report is generated for each account specified. An example of this report is shown below.

```
SAMPLE ASSET MANAGEMENT PAGE 1 OF 2
BALLLU.LPM
HISTORICAL PERFORMANCE ANALYSIS FOR TOTAL PORTFOLIO
LUCILLE BALL
*****S & P 500 Price**** Dow Jones Industrial Ave
CUMULATIVE CUM CUM CUM
APPRAISAL CONTRIB CONTRIB PERCENT PERCENT PERCENT PERCENT PERCENT PERCENT
DATE VALUE (DEDUCT) (DEDUCT) CHANGE CHANGE CLOSE CHANGE CHANGE CLOSE CHANGE
CHANGE
```

```
-------- ---------- ---------- ---------- ------ ------ ------ ------ ------ -
------ ------ ------

01/31/00 8,837,351 1,394 10,941 ( 1)

02/29/00 9,076,911 2.71 2.71 1,366 -2.01 -2.01 10,129 -7.42 -7.42 ( 1)

03/31/00 8,900,651 -1.94 0.72 1,499 9.67 7.47 10,922 7.83 -0.17 ( 1)

04/30/00 8,368,929 -5.97 -5.30 1,452 -3.08 4.16 10,734 -1.72 -1.89 ( 1)

05/31/00 8,319,851 -0.59 -5.86 1,421 -2.19 1.87 10,523 -1.97 -3.82 ( 1)

06/30/00 8,656,224 350,000 350,000 -0.16 -6.00 1,455 2.39 4.31 10,448 -0.71 -
4.51 ( 1)

07/31/00 8,783,205 350,000 1.47 -4.63 1,431 -1.63 2.61 10,522 0.71 -3.83 ( 1)

08/31/00 9,163,458 350,000 4.33 -0.50 1,518 6.07 8.84 11,216 6.60 2.51 ( 1)

09/30/00 9,043,966 350,000 -1.30 -1.79 1,437 -5.35 3.02 10,651 -5.04 -2.65 (
1)

10/31/00 8,936,938 350,000 -1.18 -2.96 1,429 -0.49 2.51 10,972 3.01 0.28 ( 1)

11/30/00 8,433,722 350,000 -5.63 -8.42 1,315 -8.01 -5.70 10,415 -5.08 -4.81 (
1)

12/31/00 10,798,899 350,000 28.04 17.26 1,320 0.41 -5.32 10,787 3.57 -1.41 (
1)

01/31/01 13,650,213 350,000 26.40 48.22 1,366 3.46 -2.04 10,888 0.94 -0.48 (
1)

•••

SAMPLE ASSET MANAGEMENT PAGE 2 OF 2

BALLLU.LPM

HISTORICAL PERFORMANCE ANALYSIS FOR TOTAL PORTFOLIO

LUCILLE BALL

*****S & P 500 Price**** Dow Jones Industrial Ave

CUMULATIVE CUM CUM CUM

APPRAISAL CONTRIB CONTRIB PERCENT PERCENT PERCENT PERCENT PERCENT PERCENT

DATE VALUE (DEDUCT) (DEDUCT) CHANGE CHANGE CLOSE CHANGE CHANGE CLOSE CHANGE
CHANGE

-------- ---------- ---------- ---------- ------ ------ ------ ------ ------ -
------ ------ ------

YEAR-END SUMMARY PERFORMANCE:

01/31/00 8,837,351 1,394 10,941 ( 1)
```

```
12/31/00 10,798,899 350,000 350,000 17.26 17.26 1,320 -5.32 -5.32 10,787 -1.41
-1.41 ( 1)

12/31/01 13,477,701 2,000 352,000 24.79 46.33 1,148 -13.04 -17.67 10,022 -7.09
-8.40 ( 1)

INCEPTION-TO-DATE ANNUALIZED RATE OF RETURN: 11.91% -18.74% -13.04%

YEAR TO DATE RATE OF RETURN: -7.66% -30.27% -24.88%

YEAR-TO-DATE QUARTERLY PERFORMANCE:

12/31/00 10,798,899 350,000 17.26 1,320 -5.32 10,787 -1.41 ( 1)

03/31/01 14,220,068 350,000 31.68 54.41 -6.09 -11.08 -2.70 -4.07 ( 1)

06/30/01 13,259,384 350,000 -6.76 43.98 1,224 -1.25 -12.19 10,503 0.07 -4.00 (
1)

09/30/01 12,570,992 350,000 -5.19 36.51 1,041 -14.99 -25.35 8,848 -15.76 -
19.13 ( 1)

12/31/01 13,477,701 2,000 352,000 7.20 46.33 1,148 10.29 -17.67 10,022 13.27 -
8.40 ( 1)

03/31/02 13,604,538 22,000 374,000 0.78 47.47 1,147 -0.06 -17.72 10,404 3.81 -
4.91 ( 1)

06/30/02 13,022,704 160,653 534,653 -5.40 39.50 990 -13.73 -29.02 9,243 -11.16
-15.52 (***)

09/30/02 12,618,217 534,653 -3.11 35.16 815 -17.63 -41.53 7,592 -17.87 -30.61
(***)

PERCENT CHANGE STATISTICAL SUMMARY

STATISTIC MONTHLY QTRLY YEARLY

---------- -------- ------ -------

OBSERVATIONS 32.00 7.00 1.00

MEAN 1.18 2.74 24.79

MEDIAN -0.45 -3.11 24.79

STD DEV 7.32 12.62 0.00

MAXIMUM 28.04 31.68 24.79

MINIMUM -6.76 -6.76 24.79

NOTE: PARTIAL PERIODS ARE EXCLUDED FROM SUMMARY STATISTICS.

DATA INCOMPLETE FOR THE FOLLOWING BENCHMARKS: SP500 DJIA
```

Chapter 12: Troubleshooting Benchmarks

12.1 Correcting M sectors with billing and 0 values

The PM - Manual sector, or M sector, can be used either for storing billable values for clients using the APL Billvue billing system OR for benchmark SNAMs. This sector cannot be used for both items. However, the M sector can become corrupted with billing data and 0 values if the PMSECTAI function is run on a benchmark SNAM.

To resolve this issue:

“Check to see if the benchmark is mapped correctly in EDINDEX. See if there are any BILL entries in the M sector. If so, remove them and refresh the benchmark.”

1. Run the FASTPMSECT function against the SNAM of the impacted benchmark. For more information on FASTPMSECT please refer to Viewing performance data using FASTPMSECT.

Access the Manual sector and search for the “BILL” word string. If you discover that billing information and 0 values populate the benchmark, run EDPMSECT and remove all lines with 0 values. For more information on EDPMSECT, please refer to Editing and viewing performance data.

2. Run UPDATEINDEX from the last valid line in the M sector. For more information on running UPDATEINDEX, please refer to Updating a Russell benchmark using UPDATEINDEX.

12.2 Using PMFIRMFLEX for troubleshooting problematic blended benchmarks

Because the PMFIRMFLEX function allows you to display a variety of performance information, such as time periods and sectors, as well as lets you specify the sorting, this function can be used for troubleshooting benchmarks. If you suspect a IS benchmark file is corrupted, run the function using the benchmark’s SNAM, choosing time periods, sectors, and sorting preferences based on your assumptions. If the report shows information consistent with a corrupted data file, run the PMHISTSECT function using the same benchmark SNAM to see where the data skews.

For additional information on running PMFIRMFLEX, please refer to Compare performance to benchmarks, with PMFIRMFLEX.

12.3 Using PMCHECKBENCH to identify values that result in erroneous returns

PMCHECKBENCH is a cross-reference performance report function that can help you identify any value, and especially a beginning market value, that results in an erroneous return. This report is intended for, but not limited to, the “quarter end checkout process” so that you can identify -100% benchmark returns prior to running quarter-end production statements.

This function allows you to enter an account selection and up to five benchmarks. The output of the report contains:

- An account identifier (i.e. SNAM, BWNUM, DTCNO)
- The inception date of the account (First V in the Performance File)
- Account performance returns for Quarter to Date, Year to Date, Since Inception Cumulative, and Since Inception Annualized
- Benchmark returns that are all Since Inception, both cumulative and annualized, for up to five benchmarks measured

To run the report:

1. Type PMCHECKBENCH at the WHAT NEXT? prompt. You receive a message requesting an ending date for the report

```
AS OF DATE (MM/DD/YY) - HIT ENTER FOR 09/11/17 :
```

2. Press ENTER to use the previous business day’s date as the end date for the report, or enter a different date in MM/DD/YY format

and press Enter. A prompt will appear asking you to choose an account, or range of accounts, to include in the report.

```
1635 ACCOUNTS CURRENTLY ON FILE SEARCH FOR WHAT?
```

3. Input a search string that allows you to choose the appropriate account or group of accounts and press ENTER. A prompt will appear listing the number of accounts meeting the search criteria. If an additional operation is needed, input the appropriate search criteria at the NEXT OPERATION prompt

```
SEARCH FOR WHAT? RR EQ 99

191 RECORDS FOUND

NEXT OPERATION (HIT RETURN WHEN DONE, OR TYPE HELP):
```

4. Otherwise, press ENTER to proceed. A prompt will appear asking whether you want to specify an account identifier

```
Select Account Identifier: ?
```

5. To choose an account identifier, specify either SNAM, BWNUM, or DTCNO and press ENTER. A prompt will appear asking you to include an identifier. Input the identifier and press ENTER. You are prompted to specify which benchmarks to include in the report

```
PLEASE ENTER UP TO 5 BENCHMARK(S) (I.E. SP500 DJIA)
```

6. Input the abbreviations (SNAM) of up to five 5 benchmarks, leaving a space between each SNAM and press Enter. The report is output to the BENPRF.LRP file. An edited version of this file is shown below.

```
CHECKFREE TRAINING ASSET MANAGEMENT

ACCOUNT/BENCHMARK INCEPTION PERFORMANCE REPORT

AS OF April 13, 2006

TEST PMCHECKBENCH REPORT

MGR EQ NJ

SP500

INCEPT QUARTER YEAR INCEPT INCEPT INCEPT INCEPT

SNAM DATE TO DATE TO DATE TO DATE ANNUAL TO DATE ANNUAL

------ -------- ------- ------- ------- ------- ------- -------

TRAIN2 20040401 0.00 0.00 0.00 0.00 -100.00 -100.00

TRAIN3 20040401 0.00 0.00 0.00 0.00 -100.00 -100.00

GLTM01 19970430 1.94 -0.75 75.76 6.50 -100.00 -100.00

GLTM02 19970430 1.66 -0.76 75.08 6.46 -100.00 -100.00

GLTM03 19970430 1.67 -0.77 74.58 6.42 -100.00 -100.00

GLTM04 19970430 1.66 -0.76 75.08 6.46 -100.00 -100.00

GLTM05 19970430 1.66 -0.76 75.08 6.46 -100.00 -100.00

NJ021 20041126 0.00 0.00 0.00 0.00 -100.00 -100.00

REORG1 20051231 3.16 -1.98 -1.98 -6.85 -100.00 -100.00

NJ002 19970430 -0.11 -0.97 44.05 4.16 -100.00 -100.00

NJ003 19921130 5.40 0.624,396.98 32.94 -100.00 -100.00

NJ004 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00

NJ005 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00

NJ006 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
```

```
NJ007 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
NJ008 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
NJ020 19970430 5.49 -0.32 70.80 6.16 -100.00 -100.00
NJ001 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
NJ009 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
NJ010 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
NJ011 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
NJ012 19970430 5.40 0.62 59.79 5.37 -100.00 -100.00
--------------------------------------------------------------------------------
--------------------
PRESS <ESC> TO EXIT <F1> FOR HELP <F3> MAIN MENU
```

12.4 Correcting blended benchmarks showing -100% return

If, after running REFBLNDBNCH, your blended benchmarks show a - 100% return:

1. Verify that the underlying benchmarks are mapped, have updated returns, and that they all have values for the OPEDT of the blended account
2. Verify that the benchmark is correctly mapped in EDDESPCT

12.5 Finding date discrepancies

The OPEDTVSBENCH function identifies accounts whose opening dates do not correspond to the dates for benchmarks used to measure account performance. When an account's opening date does not match a corresponding benchmark date, use ADDFNDVAL to generate mid-month evaluations. See Calculate mid-month performance using ADDFNDVAL.

To identify date discrepancies using OPEDTVSBENCH:

1. Type OPEDTVSBENCH at the WHAT NEXT? prompt. The SEARCH FOR WHAT? prompt will appear
2. Enter the benchmark account identifier and press ENTER. The following will appear:

```
+--------------------------------------------------------------------------------
----+
|PLS PICK INDICES|
```

```
|-------------------------------------------------------------------------
----|
| BLANK NASDAQ COMPOSITE PRICE (MBD: 11/30/92) (DBD: 11/25/92) * APL*|
| BLANK CONSUMER PRICE (MBD: 11/30/92) (DBD: 11/25/92) * APL*|
| BLANK DOW JONES INDUSTRIAL AVERAGE (MBD: 11/30/64) (DBD: 10/02/84) * APL*|
| BLANK DOW JONES TOTAL RETURN (MBD: 11/30/75) (DBD: 02/03/93) * APL*|
| BLANK ML TREASURY 91 DAY (MBD: 12/31/77) (DBD: 09/03/96) * APL*|
| BLANK MSCI EAFE (MBD: 08/31/95) (DBD: 08/25/95) * APL*|
| BLANK MSCI EXCLUDING U.S. (MBD: 02/28/97) (DBD: 02/12/97) * APL*|
| BLANK MSCI WORLD (MBD: 08/31/85) (DBD: 08/25/85) * APL*|
| BLANK S&P 400 INDUSTRIALS (MBD: 12/31/96) (DBD: 11/03/97) * APL*|
| BLANK S&P 400 MIDCAP (MBD: 02/28/81) * APL*|
| AMEXCP AMEX COMPOSITE *RUSS*|
| BANKAC BANKERS ACCEPT *RUSS*|
| COMP30 COMM PAPER 30D *RUSS*|
| COMPAP COMMER PAPER *RUSS*|
| DOMINI DOMINI SOCIAL *RUSS*|
| DOW DJ IND (FRC) *RUSS*|
| FBCB 1ST BOS CNV BD *RUSS*|
| FBCS 1ST BOS CNV SEC *RUSS*|
| FBH CSFB GL HY *RUSS*|
| FBHLT CSFB GL HY LOW *RUSS*|
| FBHUMN CSFB GL HY UMNR *RUSS*|
| FBHUT CSFB GL HY UP *RUSS*|
| FBMIDT CSFB GL HY MID *RUSS*|
| FROLEY FROLEY REVY 30 *RUSS*|
| GS100C GS 100 CNV *RUSS*|
| GSCI GS CMDTY (GSCI) *RUSS*|
+--+-------------------------------------------------------------------------
-+--+
| Esc-Exit F1-Help F4-Search SF5-Select ALL SF6-Clear ALL |
| F7-Refresh Search F8-Options F10-Go Return-Select/Un-Select |
```

+----------+

Option	Description
ESC	Exit the screen
F1	Access the help screen
F4	Search for a particular string in a description
SF5	Select all of the indices
SF6	Un-select all of the selected indices
SF7	Refresh your search. start a new search
F8	Search and include all matches or to search and exclude all matches
ENTER	Select. Or, un-select

3. Type additional commands for broadening or narrowing account selection and press ENTER. A list of benchmarks available for date comparison will appear
4. Select the benchmarks you want to compare with the selected accounts. To do so, highlight a benchmark and press Enter. An asterisk will appear to the left of the benchmark indicating that is has been selected
5. Press F10 when your selections are complete. OPEDTVSBENCH produces a report and places it in a file called VSBENCH.LST

Appendix A: Issue Types

Securities in the APL Expert system are identified for performance measurement based on the issue type. Thi

A.1 Equities sector issue types

Type	Description
3	options
28	common stocks
30	warrant and rights
31	convertible bonds
32	units
35	mutual funds
37	foreign common stocks
46	convertible preferred stocks
51	option - call
52	option - put
81	mutual funds - aggressive growth
82	mutual funds - equity income
83	mutual funds - conservative growth
87	equity futures contract
88	equity futures reserves
96	PERCS (preferred equity redemption certificate)
801	mutual funds - international equity

A.2 Fixed Income sector issue types

Type	Description
5	corporate bond funds
6	municipal bond funds
7	government bond fund
12	municipal bonds (general obligation)
14	municipal bonds (revenue)
29	preferred stocks
34	corporate bonds
39	pay-in-kind bonds
44	government obligations
45	foreign bonds
47	preferred income funds
49	taxable municipal bonds
50	municipal bonds
53	options - futures
56	mortgage & bond funds
60	asset-backed securities
63	foreign CDs / commercial paper
64	floating rate notes
65	miscellaneous bonds
66	high yield bonds
70	zero coupon bonds

Type	Description
71	adjustable rate preferred
75	zero coupon bonds (corporate)
76	zero coupon bonds (municipal)
77	promissory notes
78	repurchase agreements
79	zero coupon bonds (government)
80	mutual funds - fixed income
85	bond futures contracts
86	bond futures reserves
89	futures contracts
93	collateralized mortgage obligations (CMOs)
101	liabilities
441	government agencies
444	mortgage backed securities
802	mutual funds - international fixed income

A.3 Cash Equivalents sector issue types

Field	Description
1	cash and cash equivalents
4	foreign currencies
36	certificates of deposit / commercial paper

Appendix B: Flows to and from core sectors

The tables on the following pages show how contributions and withdrawals are reflected in the core sectors.

	Total Sector		Equity and Fixed Income Sectors		Equity and Fixed Income in the Cash Sector		Cash and Equivalents in the Cash Sector	
Type	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**
OPE			X			X		
CLO				X	X			
RCV (cash)	X				X		X	
DLV (cash)		X				X		X
RCV (security)	X		X					
DLV (security)		X		X				
RCVINC	X				X		X	
DLVINC		X				X		X
INT				X	X			
DIV				X	X			
INC				X	X			
INTACC (-)			X			X		
INTACC (+)				X	X			
FEEADV		X						X
PRI (-)								

	Total Sector		Equity and Fixed Income Sectors		Equity and Fixed Income in the Cash Sector		Cash and Equivalents in the Cash Sector	
Type	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**
PRI (+)								